

Kathleen Fuller

SEARCH REQUEST FORM

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Requester's Full Name: Laurie Ann Examiner #: 7174 Date: 12/29/05
Art Unit: 174 Phone Number 30: 271294 Serial Number: 1063372
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If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: See Front Page

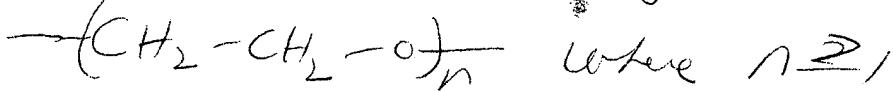
Inventors (please provide full names): _____

Earliest Priority Filing Date: _____

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Could you search for a liquid electrolyte Enzyme

A solvent containing a γ -butyrolactone and
a macromolecular material having the structure



Hank

Laurie

STAFF USE ONLY		Type of Search	Vendors and cost where applicable
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Clerical Prep Time:		Patent Family	WWW/Internet <input type="checkbox"/>
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FILE LAST UPDATED: 15 Sep 2005 (20050915/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> D QUE

L5 1 SEA FILE=REGISTRY ABB=ON BUTYROLACTONE/CN
 L6 1 SEA FILE=REGISTRY ABB=ON "POLYETHYLENE OXIDE"/CN
 L7 15837 SEA FILE=HCAPLUS ABB=ON L5 OR BUTYROLACTONE
 L8 84653 SEA FILE=HCAPLUS ABB=ON L6
 L9 321 SEA FILE=HCAPLUS ABB=ON L7 AND L8
 L11 2202 SEA FILE=HCAPLUS ABB=ON L7 (L) ELECTROLYT?
 L13 4 SEA FILE=HCAPLUS ABB=ON L11 (L) L8
 L15 140 SEA FILE=HCAPLUS ABB=ON L9 AND ELECTROLYT?
 L16 97 SEA FILE=HCAPLUS ABB=ON L15 AND BATTER?
 L17 2675 SEA FILE=HCAPLUS ABB=ON L8 (L) DEV/RL
 L18 61 SEA FILE=HCAPLUS ABB=ON L17 AND L16
 L19 1588 SEA FILE=HCAPLUS ABB=ON L7 (5A) SOLVENT#
 L21 6 SEA FILE=HCAPLUS ABB=ON L18 AND L19
 L22 9 SEA FILE=HCAPLUS ABB=ON L13 OR L21
 L23 7685 SEA FILE=HCAPLUS ABB=ON POLYMER (4A) ADDITIV?
 L24 1 SEA FILE=HCAPLUS ABB=ON L18 AND L23
 L25 1 SEA FILE=HCAPLUS ABB=ON L16 AND L23
 L26 9 SEA FILE=HCAPLUS ABB=ON L22 OR L24 OR L25
 L27 47 SEA FILE=HCAPLUS ABB=ON L7 AND POLYETHYLENE OXIDE
 L28 30 SEA FILE=HCAPLUS ABB=ON L27 AND ELECTROLYT?
 L29 20 SEA FILE=HCAPLUS ABB=ON L28 AND BATTER?
 L30 26 SEA FILE=HCAPLUS ABB=ON L26 OR L29

=> D L30 BIB ABS IND HITSTR 1-26

L30 ANSWER 1 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2005:96153 HCAPLUS
 DN 142:159585
 TI Secondary nonaqueous **electrolyte battery**
 IN Inada, Shusuke; Yajima, Toru; Fukui, Asuka; Sato, Asako; Matsumoto,
 Koichi; Endo, Shota; Sato, Kazuya
 PA Toshiba Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 15 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005032549	A2	20050203	JP 2003-195977	20030711
PRAI JP 2003-195977		20030711		

AB The battery uses an anode containing poly(ethylene glycol) and/or poly(ethylene oxide), having number average mol. weight 5000-1,000,000, at 0.2-3% the weight of the **battery electrolyte**. Preferably, the **electrolyte** contains cyclic carbonate and γ -butyrolactone.

IC ICM H01M004-02
 ICS H01M004-62; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary nonaq **battery** anode polyethylene glycol;
 polyethylene oxide secondary nonaq **battery**
 anode

IT **Battery** anodes
 (carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium **batteries**)
 IT Carbon fibers, uses
 RL: DEV (Device component use); USES (Uses)

(carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium batteries)

IT Polyoxyalkylenes, uses

RL: MOA (Modifier or additive use); USES (Uses)
(carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium batteries)

IT Styrene-butadiene rubber, uses

RL: MOA (Modifier or additive use); USES (Uses)
(carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium batteries)

IT 9004-32-4, CMC 25322-68-3, Poly(ethylene glycol)

RL: MOA (Modifier or additive use); USES (Uses)
(carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium batteries)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium batteries)

L30 ANSWER 2 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:943678 HCAPLUS

DN 142:180347

TI Gel-type polymer electrolyte and lithium battery employing the electrolyte

IN Bae, Jin Yeong; Doo, Seok Gwang; Hwang, Seung Sik; Kim, Han Su; Kim, Jin Hwan

PA Samsung SDI Co., Ltd., S. Korea

SO Repub. Korean Kongkae Taeho Kongbo, No pp. given

CODEN: KRXXA7

DT Patent

LA Korean

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI KR 2003017945	A	20030304	KR 2001-51589	20010825
PRAI KR 2001-51589		20010825		

AB A gel-type polymer electrolyte, a lithium battery employing the electrolyte and their preparation methods are provided, to improve the ion conductivity and the organic electrolyte solution protecting property at a room and high temperature. The gel-type polymer electrolyte comprises 10-60 wt% of a product obtained by the crosslinking reaction of polyethylene glycol and an epoxy compound; 10-70 wt% of a softening agent polymer; 20-90 wt% of an organic electrolyte solution which comprises a lithium salt and an organic solvent and is mixed with the cross-linked product uniformly; and optionally 5-40 wt% of a ceramic filler. Preferably the softening agent polymer is at least one selected from the group consisting of polyvinylidene fluoride, vinylidene fluoride-hexafluoropropylene copolymer, poly(vinyl chloride), polysulfone, polymethacrylate, polyolefin, polyethylene oxide, polyurethane, poly(vinyl alc.) and polyacrylonitrile; the organic solvent is at least one selected from the group consisting of ethylene carbonate, propylene carbonate, di-Me carbonate, di-Et carbonate, ethylmethyl carbonate, THF and γ -butyrolactone; the lithium salt is selected from the group consisting of LiAsF₆, LiPF₆, LiSCN, LiClO₄, LiBF₄, LiCF₃SO₃, LiN(CF₃SO₂)₂ and LiC(CF₃SO₂)₃; and the ceramic filler is at least one selected from the group consisting of silica, alumina, lithium aluminate and zeolite.

IC ICM H01M004-60

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST gel type polymer electrolyte lithium battery employing
electrolyte

IT Fillers
(ceramic; gel type polymer electrolyte and lithium
battery employing electrolyte)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(epoxy-, graft, polyethylene glycol- containing; gel type polymer
electrolyte and lithium battery employing
electrolyte)

IT Zeolites (synthetic), uses
RL: DEV (Device component use); USES (Uses)
(filler; gel type polymer electrolyte and lithium
battery employing electrolyte)

IT Ceramics
(fillers; gel type polymer electrolyte and lithium
battery employing electrolyte)

IT Battery electrolytes
Plasticizers
Polymer electrolytes
(gel type polymer electrolyte and lithium battery
employing electrolyte)

IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(gel type polymer electrolyte and lithium battery
employing electrolyte)

IT Drug delivery systems
(gels; gel type polymer electrolyte and lithium
battery employing electrolyte)

IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(halo; gel type polymer electrolyte and lithium
battery employing electrolyte)

IT Ionic conductivity
(improved; gel type polymer electrolyte and lithium
battery employing electrolyte)

IT Secondary batteries
(lithium, gel polymer electrolytes for; gel type polymer
electrolyte and lithium battery employing
electrolyte)

IT Polyolefins
Polysulfones, uses
Polyurethanes, uses
RL: DEV (Device component use); USES (Uses)
(plasticizer; gel type polymer electrolyte and lithium
battery employing electrolyte)

IT Vinyl compounds, uses
RL: DEV (Device component use); USES (Uses)
(polymers, plasticizer; gel type polymer electrolyte and
lithium battery employing electrolyte)

IT Epoxy resins, uses
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(polyoxyalkylene-, graft, polyethylene glycol- containing; gel type polymer
electrolyte and lithium battery employing
electrolyte)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 37220-89-6, Lithium
aluminate

RL: DEV (Device component use); USES (Uses)
 (filler; gel type polymer electrolyte and lithium battery employing electrolyte)

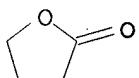
IT 96-48-0, γ - Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7 109-99-9, Tetrahydrofuran, uses 556-65-0, Lithium thiocyanate 616-38-6 623-53-0, Ethylmethyl carbonate 7791-03-9 14283-07-9, Lithium tetrafluoroborate 21324-40-3 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide 132843-44-8, Lithium bis(pentafluoroethanesulfonyl)imide
 RL: DEV (Device component use); USES (Uses)
 (gel type polymer electrolyte and lithium battery employing electrolyte)

IT 25322-68-3D, Polyethylene glycol, reaction products with epoxy compds.
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (gel type polymer electrolyte and lithium battery employing electrolyte)

IT 9002-86-2, Polyvinyl chloride 9002-89-5, Polyvinyl alcohol 9011-17-0, Vinylidene difluoride-hexafluoropropylene copolymer 24937-79-9, Poly(vinylidene difluoride) 25014-41-9, Polyacrylonitrile 25087-26-7D, Poly(methacrylic acid), derivs. 25322-68-3, Polyethylene oxide
 RL: DEV (Device component use); USES (Uses)
 (plasticizer; gel type polymer electrolyte and lithium battery employing electrolyte)

IT 96-48-0, γ - Butyrolactone
 RL: DEV (Device component use); USES (Uses)
 (gel type polymer electrolyte and lithium battery employing electrolyte)

RN 96-48-0 HCPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 3 OF 26 HCPLUS COPYRIGHT 2005 ACS on STN
 AN 2004:938456 HCPLUS
 DN 142:117458
 TI LiFePO₄/polymer/natural graphite: low cost Li-ion batteries
 AU Zaghib, K.; Striebel, K.; Guerfi, A.; Shim, J.; Armand, M.; Gauthier, M.
 CS Institut de Recherche d'Hydro-Quebec, QC, J3X 1S1, Can.
 SO Electrochimica Acta (2004), 50(2-3), 263-270
 CODEN: ELCAAV; ISSN: 0013-4686
 PB Elsevier B.V.
 DT Journal
 LA English
 AB The aging and performance of natural graphite/PEO-based gel electrolyte/LiFePO₄ cells are reported. The gel polymer electrolytes were produced by electron-beam irradiation and then soaked in a liquid electrolyte. The natural graphite anode in gel electrolyte containing LiBF₄-EC/GBL exhibited high reversible capacity (345 mAh/g) and high coulombic efficiency (91%). The LiFePO₄ cathode in the same gel-polymer exhibited a reversible capacity of 160 mAh/g and 93% coulombic efficiency. Better performance was obtained at high-rate

discharge with 6% carbon additive in the cathode, however the graphite anode performance suffers at high rate. The Li-ion gel polymer **battery** shows a capacity fade of 13% after 180 cycles and has poor performance at low temperature due to low diffusion of the lithium to the graphite in the GBL system. The LiFePO₄/gel/Li system has an excellent rate capacity. LiFePO₄ cathode material is suitable for HEV application.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s) : 49, 72, 76

ST gel polymer **electrolyte** graphite Lithium **battery** anode
discharge capacity; solvent effect lactone carbonate lithium secondary
battery cycling impedance; iron lithium phosphate composite
cathode polymer **electrolyte** discharge capacity

IT **Battery** anodes
 Battery cathodes
 Gels
 (LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
 for use in low cost Li-ion **batteries**)

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
 (LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
 for use in low cost Li-ion **batteries**)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
 (LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
 for use in low cost Li-ion **batteries**)

IT Carbon fibers, uses
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
 (Petoca, modifier for composite anode; LiFePO₄/polymer/natural graphite
 and gel polymer **electrolyte** for use in low cost Li-ion
 batteries)

IT Carbon black, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
 (Shawinigan; LiFePO₄/polymer/natural graphite and gel polymer
 electrolyte for use in low cost Li-ion **batteries**)

IT Electric energy
 (discharge capacity of half-cells and assembled **batteries**;
 LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
 for use in low cost Li-ion **batteries**)

IT Cathodic polarization
 (discharge potential profiles; LiFePO₄/polymer/natural graphite and gel
 polymer **electrolyte** for use in low cost Li-ion
 batteries)

IT Pressure
 (effect on reversible and irreversible electrode capacities;
 LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
 for use in low cost Li-ion **batteries**)

IT Polymer **electrolytes**
 (gel; LiFePO₄/polymer/natural graphite and gel polymer
 electrolyte for use in low cost Li-ion **batteries**)

IT Electric resistance
 (interfacial; LiFePO₄/polymer/natural graphite and gel polymer
 electrolyte for use in low cost Li-ion **batteries**)

IT Secondary **batteries**
 (lithium; LiFePO₄/polymer/natural graphite and gel polymer
 electrolyte for use in low cost Li-ion **batteries**)

IT Electric impedance
 (of electrode half-cells; LiFePO₄/polymer/natural graphite and gel

polymer electrolyte for use in low cost Li-ion batteries)

IT Polymerization
 (radiochem.; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)

IT 7439-93-2, Lithium, uses 7440-50-8, Copper, uses
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)

IT 7782-42-5P, Graphite, uses
 RL: DEV (Device component use); PRP (Properties); PUR (Purification or recovery); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (Natural, composite anodes with PVDF; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)

IT 24937-79-9, PVDF
 RL: DEV (Device component use); USES (Uses)
 (composite anodes with graphite, cathodes with carbon black/FeLiPO₄; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)

IT 15365-14-7, Iron lithium phosphate (FeLiPO₄)
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (composite cathodes with PVDF/carbon black; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)

IT 7429-90-5, Aluminum, uses
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (dis; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)

IT 17341-24-1D, PEO complexes, uses
 RL: DEV (Device component use); USES (Uses)
 (gel polymer electrolytes with organic solvents and PEO; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)

IT 105-58-8, Diethyl carbonate 2832-49-7, N,N,N',N'-Tetraethylsulfamide
 RL: DEV (Device component use); USES (Uses)
 (gel polymer electrolytes with organic solvents/PEO/lithium salts; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)

IT 14283-07-9
 RL: DEV (Device component use); USES (Uses)
 (gel polymer electrolytes with organic solvents/PEO; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (gel polymer electrolytes with organic solvents/lithium salts/PEO; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)

IT 25322-68-3D, PEO, lithium ion complexes
 RL: DEV (Device component use); USES (Uses)
 (gel polymer electrolytes with organic solvents/lithium salts; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)

IT 25322-68-3DP, PEO, crosslinked, lithium ion complexes
 RL: DEV (Device component use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(gel polymer electrolytes with organic solvents/lithium salts;
LiFePO₄/polymer/natural graphite and gel polymer electrolyte
for use in low cost Li-ion batteries)

IT 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide

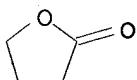
RL: DEV (Device component use); USES (Uses)
(salt in polymer gel electrolyte; LiFePO₄/polymer/natural
graphite and gel polymer electrolyte for use in low cost
Li-ion batteries)

IT 96-48-0, γ -Butyrolactone

RL: DEV (Device component use); USES (Uses)
(gel polymer electrolytes with organic solvents
/lithium salts/PEO; LiFePO₄/polymer/natural graphite and gel polymer
electrolyte for use in low cost Li-ion batteries)

RN 96-48-0 HCPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)

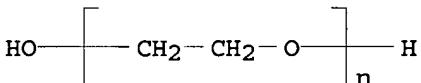


IT 25322-68-3D, PEO, lithium ion complexes

RL: DEV (Device component use); USES (Uses)
(gel polymer electrolytes with organic solvents/lithium salts;
LiFePO₄/polymer/natural graphite and gel polymer electrolyte
for use in low cost Li-ion batteries)

RN 25322-68-3 HCPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX
NAME)

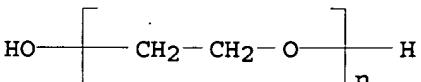


IT 25322-68-3DP, PEO, crosslinked, lithium ion complexes

RL: DEV (Device component use); SPN (Synthetic preparation);
PREP (Preparation); USES (Uses)
(gel polymer electrolytes with organic solvents/lithium salts;
LiFePO₄/polymer/natural graphite and gel polymer electrolyte
for use in low cost Li-ion batteries)

RN 25322-68-3 HCPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX
NAME)



RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 4 OF 26 HCPLUS COPYRIGHT 2005 ACS on STN

AN 2004:843679 HCPLUS

DN 141:426229

TI Polymer electrolyte for lithium secondary battery

IN Lim, Mi Ra; Lee, Seung Yeun

PA Lg Chemicals Co., Ltd, S. Korea

SO Repub. Korea, No pp. given

CODEN: KRXXFC

DT Patent

LA Korean

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI KR 147106	B1	19980915	KR 1995-30963	19950920
PRAI KR 1995-30963		19950920		

AB A high polymer electrolyte of a lithium secondary battery is provided to improve an ion conductivity at a low temperature and to increase a discharge capacity. A lithium secondary battery comprises a complex anode, a high polymer electrolyte, a cathode, an anode collector plate and a cathode collection plate. The high polymer electrolysis is formed by mixing two or more materials selected from a group of dimethoxyethane, diethylphthalate (DEP), gamma-butyrolactone, N-methylpyrrolidone, and 2-Me THF, with a polyethylene oxide (PEO) containing a lithium salt.

IC ICM H01M010-36

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST polymer electrolyte lithium secondary battery
polyethylene oxide salt complex

IT Plates

(current collectors; polymer electrolyte for lithium secondary battery)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(lithium complexes, in polymer electrolyte; polymer electrolyte for lithium secondary battery)

IT Secondary batteries

(lithium, polymer electrolytes for; polymer electrolyte for lithium secondary battery)

IT Battery electrolytes

Polymer electrolytes

Solid electrolytes

(polymer electrolyte for lithium secondary battery)

IT 17341-24-1D, complexes with polyethylene oxide

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(in polymer electrolytes; polymer electrolyte for lithium secondary battery)

IT 84-66-2, Diethylphthalate 96-47-9, 2-Methyl tetrahydrofuran

96-48-0 110-71-4 872-50-4, N-Methylpyrrolidone, uses

7439-93-2D, Lithium, salts

RL: DEV (Device component use); USES (Uses)

(polymer electrolyte for lithium secondary battery)

IT 25322-68-3D, Polyethylene oxide, lithium complexes, in

polymer electrolyte

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(polymer electrolyte for lithium secondary battery)

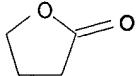
IT 96-48-0

RL: DEV (Device component use); USES (Uses)

(polymer electrolyte for lithium secondary battery)

RN 96-48-0 HCPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 5 OF 26 HCPLUS COPYRIGHT 2005 ACS on STN
 AN 2004:433948 HCPLUS
 DN 140:426125
 TI Coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes
 IN Zaghib, Karim; Armand, Michel; Guerfi, Abdelbast; Perrier, Michel; Dupuis, Elisabeth; Charest, Patrick
 PA Hydro-Quebec, Can.
 SO PCT Int. Appl., 37 pp.
 CODEN: PIXXD2
 DT Patent
 LA French
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004045007	A2	20040527	WO 2003-CA1739	20031113
	WO 2004045007	A3	20050609		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	CA 2411695	AA	20040513	CA 2002-2411695	20021113
	CA 2503893	AA	20040527	CA 2003-2503893	20031113
	EP 1573834	A2	20050914	EP 2003-775013	20031113
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
PRAI	CA 2002-2411695	A	20021113		
	WO 2003-CA1739	W	20031113		
AB	An electrode for an electrochem. cell (especially a battery) is prepared by coating at least partially the electrode with a film obtained by spreading and drying of an aqueous solution on the electrode support, in which the aqueous solution contains at least an active material, a water-soluble binder, and a water-soluble thickener. Suitable active materials are selected from finely divided (particle size 10-50 μ) metal oxides (e.g., LiMn ₂ O ₄ , LiCoO ₂ , LiFePO ₄ , LiNiO ₂ , Li ₄ Ti ₅ O ₁₂ , etc.), ceramics, carbon (including carbon fibers, synthetic graphite, and natural graphite), metals (e.g., Ag, Sn, and Cu), and semiconductors (especially Si). Suitable thickeners include natural and modified celluloses (e.g., CM-cellulose and hydroxymethyl cellulose); suitable binders include natural and synthetic rubber. Both anodes and cathodes can be prepared by this method. The method for electrode fabrication is especially useful for construction of secondary lithium batteries with nonaq. electrolytes and polymeric separators.				
IC	ICM H01M004-04				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	battery electrode coating carbon encapsulation; thickener binder				

IT **battery electrode coating**
Ceramics
Semiconductor materials
 (battery electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)
IT Carbon fibers, uses
Coke
Metals, uses
Oxides (inorganic), uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (battery electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)
IT EPDM rubber
Fluoropolymers, uses
Polyesters, uses
Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); USES (Uses)
 (battery separators; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)
IT Acrylic rubber
Epichlorohydrin rubber
Natural rubber, uses
Nitrile rubber, uses
Styrene-butadiene rubber, uses
Synthetic rubber, uses
RL: NUU (Other use, unclassified); USES (Uses)
 (binder, for coating of **battery electrodes**; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)
IT **Battery anodes**
 Battery cathodes
 Battery electrodes
Coating materials
 (coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)
IT Nitrile rubber, uses
RL: NUU (Other use, unclassified); USES (Uses)
 (hydrogenated, binder, for coating of **battery electrodes**;
 coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)
IT **Secondary batteries**
 (lithium **batteries**; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)
IT **Battery electrolytes**
 (nonaq.; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)
IT **Secondary battery separators**
 (polymeric; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)
IT Polysaccharides, uses
RL: NUU (Other use, unclassified); USES (Uses)
 (thickener, for coating of **battery electrodes**; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)
IT Tin alloy, base

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (battery electrodes; coating of substrates with active material, binder, and thickener for fabrication of battery electrodes)

IT 9004-32-4, Carboxymethyl cellulose
 RL: NUU (Other use, unclassified); USES (Uses)
 (Cellogen, thickener, for coating of battery electrodes; coating of substrates with active material, binder, and thickener for fabrication of battery electrodes)

IT 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-44-0, Carbon, uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses 12031-65-1, Lithium nickel oxide (LiNiO₂) 12031-95-7, Lithium titanium oxide (Li₄Ti₅O₁₂) 12036-22-5, Tungsten oxide (WO₂) 12057-17-9, Lithium manganese oxide (LiMn₂O₄) 12190-79-3, Cobalt lithium oxide (CoLiO₂) 15365-14-7, Iron lithium phosphate (FeLiPO₄) 128975-24-6, Lithium manganese nickel oxide (LiMn_{0.5}Ni_{0.5}O₂)
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (battery electrodes; coating of substrates with active material, binder, and thickener for fabrication of battery electrodes)

IT 9002-84-0, Poly(tetrafluoroethylene) 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9011-14-7, Poly(methyl methacrylate) 9011-17-0 24937-79-9, Poly(vinylidene fluoride) 25034-77-9, Ethylene-propylene-5-methylene-2-norbornene copolymer 25322-68-3, Polyethylene oxide 25322-69-4, Polypropylene oxide
 RL: NUU (Other use, unclassified); USES (Uses)
 (battery separators; coating of substrates with active material, binder, and thickener for fabrication of battery electrodes)

IT 9003-18-3
 RL: NUU (Other use, unclassified); USES (Uses)
 (nitrile rubber, binder, for coating of battery electrodes; coating of substrates with active material, binder, and thickener for fabrication of battery electrodes)

IT 9003-18-3
 RL: NUU (Other use, unclassified); USES (Uses)
 (nitrile rubber, hydrogenated, binder, for coating of battery electrodes; coating of substrates with active material, binder, and thickener for fabrication of battery electrodes)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 2832-49-7, N,N,N',N'-Tetraethylsulfamide 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 90076-65-6, LiTFSI 171611-11-3 244761-29-3, Lithium bis(oxalato)borate
 RL: NUU (Other use, unclassified); USES (Uses)
 (secondary battery nonaqueous electrolytes; coating of substrates with active material, binder, and thickener for fabrication of battery electrodes)

IT 9003-55-8
 RL: NUU (Other use, unclassified); USES (Uses)
 (styrene-butadiene rubber, binder, for coating of battery electrodes; coating of substrates with active material, binder, and thickener for fabrication of battery electrodes)

IT 7429-90-5, Aluminum, uses 12597-68-1, Stainless steel, uses
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (substrate, for battery electrodes; coating of substrates with active material, binder, and thickener for fabrication of

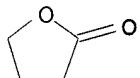
battery electrodes)

IT 9004-34-6, Cellulose, uses 37353-59-6, Hydroxymethyl cellulose
 RL: NUU (Other use, unclassified); USES (Uses)
 (thickener, for coating of battery electrodes; coating of substrates with active material, binder, and thickener for fabrication of battery electrodes)

IT 96-48-0, γ -Butyrolactone
 RL: NUU (Other use, unclassified); USES (Uses)
 (secondary battery nonaq. electrolytes; coating of substrates with active material, binder, and thickener for fabrication of battery electrodes)

RN 96-48-0 HCPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 6 OF 26 HCPLUS COPYRIGHT 2005 ACS on STN
 AN 2003:872542 HCPLUS
 DN 139:352706
 TI Lithium ion secondary battery having high safety in storing at high temperature and excellent battery property
 IN Sano, Hiroki; Nishikawa, Satoshi; Honmoto, Hiroyuki; Omichi, Takahiro
 PA Teijin Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2003317802	A2	<u>20031107</u>	JP 2002-122001	20020424
PRAI JP 2002-122001		<u>20020424</u>		

AB The Li ion secondary battery comprises anode from Li-doping and undoping C material, cathode from Li-containing transition metal oxide, a separator, and a nonaq. electrolyte, wherein the separator is a composite membrane from polyethylene terephthalate nonwoven fabric and organic polymer swelling in the electrolyte and the organic solvent component of the electrolyte is ring-form carbonate solvent. The organic polymer is polyvinylidene fluoride, polyacrylonitrile, polyethylene oxide and/or PMMA type polymer, and the ring-form carbonate solvent contains propylene carbonate and/or γ -butyrolactone and ethylene carbonate.

IC ICM H01M010-40
 ICS H01M002-16
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium secondary battery safety polyethylene terephthalate fabric composite separator
 IT Membranes, nonbiological
 (composite, separator; lithium ion secondary battery having high safety in storing at high temperature and excellent battery property)
 IT Nonwoven fabrics
 Safety
 (lithium ion secondary battery having high safety in storing at high temperature and excellent battery property)

IT Secondary batteries
 (lithium; lithium ion secondary battery having high safety in storing at high temperature and excellent battery property)

IT Fluoropolymers, uses
 Polyoxyalkylenes, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (separator from composite of PET nonwoven fabric and; lithium ion secondary battery having high safety in storing at high temperature and excellent battery property)

IT Polyesters, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (separator from composite of nonwoven fabric of; lithium ion secondary battery having high safety in storing at high temperature and excellent battery property)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 14283-07-9
 RL: TEM (Technical or engineered material use); USES (Uses)
 (electrolyte containing; lithium ion secondary battery having high safety in storing at high temperature and excellent battery property)

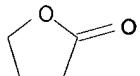
IT 25101-47-7, Chlorotrifluoroethylene-hexafluoropropylene-vinylidene fluoride copolymer
 RL: TEM (Technical or engineered material use); USES (Uses)
 (separator containing; lithium ion secondary battery having high safety in storing at high temperature and excellent battery property)

IT 9011-14-7, PMMA 24937-79-9, Polyvinylidene fluoride 25014-41-9,
 Polyacrylonitrile 25322-68-3, Polyethylene oxide
 RL: TEM (Technical or engineered material use); USES (Uses)
 (separator from composite of PET nonwoven fabric and; lithium ion secondary battery having high safety in storing at high temperature and excellent battery property)

IT 25038-59-9, Polyethylene terephthalate, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (separator from composite of nonwoven fabric of; lithium ion secondary battery having high safety in storing at high temperature and excellent battery property)

IT 96-48-0, γ -Butyrolactone
 RL: TEM (Technical or engineered material use); USES (Uses)
 (electrolyte containing; lithium ion secondary battery having high safety in storing at high temperature and excellent battery property)

RN 96-48-0 HCPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 7 OF 26 HCPLUS COPYRIGHT 2005 ACS on STN
 AN 2003:531595 HCPLUS
 DN 139:103745
 TI Secondary nonaqueous electrolyte battery
 IN Kono, Tatsuoki; Takami, Norio
 PA Toshiba Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003197257	A2	20030711	JP 2001-398106	20011227
PRAI	JP 2001-398106		20011227		

AB The **battery** has an electrode stack, containing a separator between a cathode and an anode, and an nonaq. **electrolyte** solution; where the **battery** satisfies $K = M/D = 1.2+103-9.8+107$ [$D =$ distance between 2 electrodes; $M =$ area (mm²) of **battery** height + width]; and the **electrolyte** solution is a non-Newtonian fluid.

IC ICM H01M010-40
 ICS H01M002-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **battery** nonaq **electrolyte** nonnewtonian fluid

IT Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)
 (anode; structure of secondary nonaq. **electrolyte**
batteries with controlled surface area and electrode distance)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)
 (electrolyte; structure of secondary nonaq.
electrolyte batteries with controlled surface area
 and electrode distance)

IT 111706-40-2, Cobalt lithium oxide (CoLiO-102)

RL: DEV (Device component use); USES (Uses)
 (cathode; structure of secondary nonaq. **electrolyte**
batteries with controlled surface area and electrode distance)

IT 96-48-0, γ - Butyrolactone 96-49-1, Ethylene

carbonate 14283-07-9, Lithium tetrafluoroborate 25322-68-3,
Polyethylene oxide

RL: DEV (Device component use); USES (Uses)
 (electrolyte; structure of secondary nonaq.
electrolyte batteries with controlled surface area
 and electrode distance)

IT 9002-88-4, Polyethylene

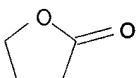
RL: DEV (Device component use); USES (Uses)
 (separator; structure of secondary nonaq. **electrolyte**
batteries with controlled surface area and electrode distance)

IT 96-48-0, γ - Butyrolactone

RL: DEV (Device component use); USES (Uses)
 (electrolyte; structure of secondary nonaq.
electrolyte batteries with controlled surface area
 and electrode distance)

RN 96-48-0 HCPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 8 OF 26 HCPLUS COPYRIGHT 2005 ACS on STN

AN 2002:945870 HCPLUS

DN 138:26917

TI Nonaqueous **electrolyte** and secondary nonaqueous

electrolyte battery
 IN Kono, Tatsuoki; Takami, Norio
 PA Toshiba Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 11 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

applicant

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002359000	A2	20021213	JP 2001-297422	20010927
	US 2003049540	A1	20030313	US 2002-83372	20020227
PRAI	JP 2001-94051	A	20010328		
	JP 2001-297422	A	20010927		

AB The electrolyte solution has an salt dissolved in an solvent mixture, and a polymer additive in the solvent mixture; where the electrolyte solution is a non-Newtonian fluid with viscosity 7-30000 cp at 20°C. The ratio (p) of ion conductivity to viscosity (σ/η) in the electrolyte solution is < 0.1, the solvent mixture contains γ - butyrolactone, and the content of the polymer material of the formula $(CH_2CH_2O)_n$ is 0.01-10 % of the solvent mixture. The battery has an active mass containing cathode, a Li intercalating anode and the above required electrolyte solution in between.

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium secondary battery electrolyte nonaq solvent

polymer additive; nonaq solvent

butyrolactone polymer additive content

viscosity

IT Battery electrolytes

(Li salt electrolyte solns. containing polymer additives in γ - butyrolactone solvent mixts. with controlled viscosity for secondary lithium batteries)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)
 (Li salt electrolyte solns. containing polymer additives in γ - butyrolactone solvent mixts. with controlled viscosity for secondary lithium batteries)

IT Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)
 (anode; Li salt electrolyte solns. containing polymer additives in γ - butyrolactone solvent mixts. with controlled viscosity for secondary lithium batteries)

IT Secondary batteries

(lithium; Li salt electrolyte solns. containing polymer additives in γ - butyrolactone solvent mixts. with controlled viscosity for secondary lithium batteries)

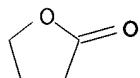
IT 96-48-0, γ - Butyrolactone 96-49-1, Ethylene carbonate 14283-07-9, Lithium tetrafluoroborate 25322-68-3, Polyethylene oxide

RL: DEV (Device component use); USES (Uses)
 (Li salt electrolyte solns. containing polymer additives in γ - butyrolactone solvent mixts. with controlled viscosity for secondary lithium batteries)

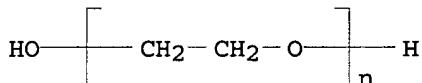
IT 111706-40-2, Cobalt lithium oxide (CoLiO-102)
 RL: DEV (Device component use); USES (Uses)
 (cathode; Li salt electrolyte solns. containing polymer
 additives in γ - butyrolactone solvent
 mixts. with controlled viscosity for secondary lithium
 batteries)

IT 96-48-0, γ - Butyrolactone 25322-68-3,
 Polyethylene oxide
 RL: DEV (Device component use); USES (Uses)
 (Li salt electrolyte solns. containing polymer
 additives in γ - butyrolactone solvent
 mixts. with controlled viscosity for secondary lithium
 batteries)

RN 96-48-0 HCPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 25322-68-3 HCPLUS
 CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)



L30 ANSWER 9 OF 26 HCPLUS COPYRIGHT 2005 ACS on STN

AN 2002:833355 HCPLUS

DN 137:327466

TI Polymeric gel electrolyte for lithium battery

IN Choi, Young-Min; Kang, Byoung-Hyun; Kim, Jin-Kyoung

PA S. Korea

SO U.S. Pat. Appl. Publ., 14 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002160269	A1	20021031	US 2002-131521	20020425
	KR 2002083117	A	20021101	KR 2002-8116	20020215
	CN 1382746	A	20021204	CN 2002-2107597	20020318
	JP 2003017128	A2	20030117	JP 2002-126912	20020426
	JP 3571032	B2	20040929		
PRAI	KR 2001-22674	A	20010426		
	KR 2002-8116	A	20020215		
AB	A polymeric gel electrolyte and a lithium battery employing the same are disclosed. The polymeric gel electrolyte includes a first ionic conductive polymer having a weight-average mol. weight of greater than or equal to 5000 and smaller than 100,000, a second ionic conductive polymer having a weight-average mol. weight of 100,000 to 5,000,000, and an electrolytic solution that includes a lithium salt and an organic solvent. The first ionic conductive polymer preferably is at least one				

polymer selected from polyethyleneglycol di-Me ether, polyethyleneglycol di-Et ether, polyethyleneglycol dimethacrylate, polyethyleneglycol diacrylate, polypropyleneglycol dimethacrylate, polypropyleneglycol diacrylate, and mixts. and combinations thereof, and the second ionic conductive polymer preferably is at least one polymer selected from polyvinylidene fluoride, polyvinylidene fluoride-hexafluoropropylene copolymer, polyurethane, **Polyethylene oxide**, polyacrylonitrile, polymethylmethacrylate, polyacrylamide, polyacetate, and mixts. and combinations thereof.

IC ICM H01M010-40

INCL 429303000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s) : 38

ST polymer gel **electrolyte** lithium battery

IT Secondary batteries

(lithium; polymeric gel **electrolyte** for lithium battery)

IT Battery electrolytes

Conducting polymers

(polymeric gel **electrolyte** for lithium battery)

IT Fluoropolymers, uses

Polyesters, uses

Polyoxyalkylenes, uses

Polyurethanes, uses

RL: DEV (Device component use); USES (Uses)

(polymeric gel **electrolyte** for lithium battery)

IT 7440-44-0, Carbon, uses

RL: DEV (Device component use); USES (Uses)

(mesocarbon microbeads; polymeric gel **electrolyte** for lithium battery)IT 75-05-8, Acetonitrile, uses 96-48-0, γ -**Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4 623-53-0, Ethyl methyl carbonate 623-96-1,

Dipropyl carbonate 872-36-6, Vinylene carbonate 1469-73-4, Propylene sulfite 3741-38-6, Ethylene sulfite 7791-03-9, Lithium perchlorate

9002-84-0, Ptfe 9002-88-4, Polyethylene 9003-05-8, Polyacrylamide

9003-07-0, Polypropylene 9004-34-6, Cellulose, uses 9011-14-7, Pmma

9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3,

Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate

21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 24991-55-7,

Polyethylene glycol dimethyl ether 25014-41-9, Polyacrylonitrile

25038-59-9, Polyethylene terephthalate, uses 25322-68-3,

Polyethylene oxide 25721-76-0, Polyethylene glycol

dimethacrylate 25852-49-7, Polypropylene glycol dimethacrylate

28158-16-9, 2-Propenoic acid, 1,2-ethanediyl ester, homopolymer

31073-72-0, Acetic acid, homopolymer 33454-82-9, Lithium triflate

52496-08-9, Polypropylene glycol diacrylate 53609-62-4, Polyethylene

glycol diethyl ether 73506-93-1, Diethoxyethane 90076-65-6

RL: DEV (Device component use); USES (Uses)

(polymeric gel **electrolyte** for lithium battery)

IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses

105-58-8, Diethyl carbonate 109-99-9, Thf, uses 616-38-6, Dimethyl

carbonate 872-50-4, n-Methylpyrrolidone, uses

RL: TEM (Technical or engineered material use); USES (Uses)

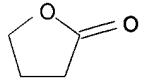
(solvent; polymeric gel **electrolyte** for lithium battery)IT 96-48-0, γ - **Butyrolactone**

RL: DEV (Device component use); USES (Uses)

(polymeric gel **electrolyte** for lithium battery)

RN 96-48-0 HCPLUS

CN 2 (3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 10 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:209797 HCAPLUS

DN 132:224883

TI Preparation of solid polymer electrolyte for batteries
, capacitors, electrochromic devices, and sensors

IN Ishiko, Eriko; Kono, Michiyuki

PA Dai-Ichi Kogyo Seiyaku Co., Ltd., Japan

SO Eur. Pat. Appl., 9 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 989620	A2	20000329	EP 1999-113354	19990709
	EP 989620	A3	20020306		
	EP 989620	B1	20040128		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000100246	A2	20000407	JP 1998-267999	19980922
	US 6329103	B1	20011211	US 1999-353995	19990715
	CA 2279309	C	20040106	CA 1999-2279309	19990729
	CA 2279309	AA	20000322		

PRAI JP 1998-267999 A 19980922

AB A solid electrolyte is disclosed, which comprises a crosslinked product of an alkylene oxide polymer having a polymerizable double bond at the terminal and/or in the side chain, and an electrolytic salt. In this, the alkylene oxide polymer is thermally crosslinked in the presence of an organic peroxide initiator having an activation energy of at most 35 Kcal/mol and having a half-value period of 10 h at a temperature not higher than 50°.

IC ICM H01M006-18

ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38, 74, 76

ST polymer electrolyte battery; capacitor polymer
electrolyte; electrochromic device polymer electrolyte;
sensor polymer electrolyte

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)
(acrylate-terminated; preparation of solid polymer electrolyte for
batteries, capacitors, electrochromic devices, and sensors)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)
(derivative, acryloyl- or methacryloyl-terminated; preparation of solid polymer
electrolyte for batteries, capacitors, electrochromic
devices, and sensors)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)
(methacryloyl-terminated; preparation of solid polymer electrolyte
for batteries, capacitors, electrochromic devices, and

sensors)

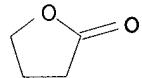
IT **Battery electrolytes**
 Capacitors
 Electrochromic devices
 Polymer electrolytes
 Sensors
 (preparation of solid polymer **electrolyte for batteries**,
 capacitors, electrochromic devices, and sensors)

IT **96-48-0, γ -Butyrolactone** 96-49-1, Ethylene
 carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate
 25322-68-3D, **Polyethylene oxide**, derivative, acryloyl- or
 methacryloyl-terminated 33454-82-9, Lithium triflate 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (preparation of solid polymer **electrolyte for batteries**,
 capacitors, electrochromic devices, and sensors)

IT **96-48-0, γ -Butyrolactone**
 RL: DEV (Device component use); USES (Uses)
 (preparation of solid polymer **electrolyte for batteries**,
 capacitors, electrochromic devices, and sensors)

RN **96-48-0 HCAPLUS**

CN 2 (3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 11 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2000:166259. HCAPLUS
 DN 132:210209
 TI Secondary nonaqueous-**electrolyte batteries** with
electrolytes containing cyanoethoxy compounds
 IN Kobayashi, Aya; Izuchi, Shuichi
 PA Yuasa Battery Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000077096	A2	20000314	JP 1998-244674	19980831
PRAI	JP 1998-244674		19980831		
OS	MARPAT 132:210209				
AB	Claimed batteries are equipped with electrolytes containing cyanoethoxy compds. R(OC ₂ H ₄ CN) _n (n = 1-4; R = C _m H _{2m+2-n} , C _m H _{2m+2-n} (OC ₂ H ₄) _p , C _m H _{2m+2-n} CO, or C _m H _{2m+2-n} OCO; m = 1-3; p = 1-4) as nonaq. solvents for Li salts. Optionally, the batteries are equipped with gelled polymer electrolytes . The batteries have long cycle life at low temperature				
IC	ICM H01M010-40				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	cyanoethoxy compd nonaq electrolyte solvent battery ;				
	lithium battery electrolyte solvent cyanoethoxy compd				
IT	Secondary batteries				

(lithium; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

IT Battery electrolytes
 (nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

IT Polyoxyalkylenes, uses
 RL: DEV (Device component use); USES (Uses)
 (trifunctional acrylates, lithium complexes, gelled electrolytes; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

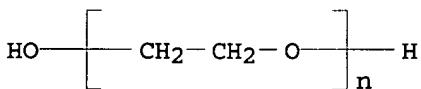
IT 14283-07-9, Lithium tetrafluoroborate
 RL: DEV (Device component use); USES (Uses)
 (electrolytes; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

IT 25322-68-3D, Polyethylene glycol, trifunctional acrylates, lithium complexes
 RL: DEV (Device component use); USES (Uses)
 (gelled electrolytes; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-67-8 1656-48-0, Bis-2-cyanoethyl ether 2141-62-0 3386-87-6 5325-93-9 20597-73-3 32846-35-8, Bis 2-cyanoethyl carbonate 35633-51-3 260362-83-2
 RL: DEV (Device component use); USES (Uses)
 (solvents; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

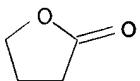
IT 25322-68-3D, Polyethylene glycol, trifunctional acrylates, lithium complexes
 RL: DEV (Device component use); USES (Uses)
 (gelled electrolytes; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

RN 25322-68-3 HCPLUS
 CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)



IT 96-48-0, γ -Butyrolactone
 RL: DEV (Device component use); USES (Uses)
 (solvents; nonaq. batteries with electrolytes containing cyanoethoxy compds. for long cycle life at low temperature)

RN 96-48-0 HCPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 12 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1999:499496 HCAPLUS
DN 131:288823
TI The measurement of self-diffusion coefficients of various species by the pulse gradient-field spin-echo NMR method. The motions of ions in the **electrolytes** for lithium **batteries**
AU Hayamizu, Kikuko; Aihara, Yuichi
CS Natl. Inst. Mater. Chem. Res., Tsukuba, 305-8565, Japan
SO Materia (1999), 38(7), 555-558
CODEN: MTERE2; ISSN: 1340-2625
PB Nippon Kinzoku Gakkai
DT Journal
LA Japanese
AB The title PGSE-NMR method was applied to the measurements of self-diffusion coefficient (D) of ions in the **electrolytes** for Li **batteries**. The NMR measurement nuclei were ⁷Li for Li⁺, ¹⁹F for N(SO₂CF₃)⁻ and ¹H for solvents used for the **batteries**, resp. The measured D values of 14 organic solvents and Li⁺ and N(SO₂CF₃)²⁻ in their solvents were inversely proportional to the solvent viscosities according to the Stokes-Einstein equation. The D ratio of Li⁺ to the solvent was >2 in ethylene carbonate and γ - **butyrolactone**, indicating 2 mols. of the **solvents** can solvate Li⁺ and that for N(SO₂CF₃)²⁻ was 1.2 in every solvents, indicating the less solvation to the anion. The molar elec. condns. of LiN(SO₂CF₃)² evaluated from the D values in organic solvents using the Nernst-Einstein equation were different from those obtained by electrochem. a.c. method. The differences are attributed to the dissociation degrees of the **electrolyte**. The PGSE-NMR method was also applied to polymer **electrolyte** gels using poly(ethylene oxide) as a polymer matrix.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 65
ST lithium **battery electrolyte** ion motion; self diffusion coeff lithium **battery electrolyte**
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT Battery **electrolytes**
Electric conductivity
(measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT Diffusion
(self-; measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT 25322-68-3
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT 96-48-0 96-49-1, Ethylene carbonate 108-29-2,
 γ -Valerolactone 108-32-7, Propylene carbonate 109-99-9, uses
110-71-4 111-96-6, Diglyme 112-49-2, Triglyme 123-91-1, 1,4-Dioxane, uses 616-38-6, Dimethyl carbonate 872-50-4, n-Methylpyrrolidone, uses 4437-85-8, Butylene carbonate
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT 17341-24-1, Lithium(1+), processes 98837-98-0
RL: PEP (Physical, engineering or chemical process); PROC (Process)

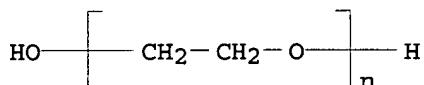
(measurements of self-diffusion coefficient of ions in electrolytes
for Li batteries)

IT 25322-68-3

RL: DEV (Device component use); USES (Uses)
(electrolyte; measurements of self-diffusion coefficient of ions
in electrolytes for Li batteries)

RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX
NAME)

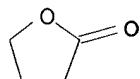


IT 96-48-0

RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(measurements of self-diffusion coefficient of ions in electrolytes
for Li batteries)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 13 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1998:781401 HCAPLUS

DN 130:168955

TI Lithium ion conduction in PEO-salt electrolytes gelled with PAN

AU Choi, B. K.; Shin, K. H.; Kim, Y. W.

CS Department of Science Education, Dankook University, Seoul, 140-714, S.
Korea

SO Solid State Ionics (1998), 113-115, 123-127

CODEN: SSIOD3; ISSN: 0167-2738

PB Elsevier Science B.V.

DT Journal

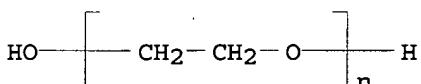
LA English

AB Hybrid solid electrolyte films consisting of poly(ethylene oxide) (PEO), LiClO₄, a mixture of ethylene carbonate (EC) and γ -butyrolactone (BL) and polyacrylonitrile (PAN) were examined in order to obtain the best compromise between high conductivity, homogeneity and dimensional stability. Measurements of elec. conductivity and differential scanning calorimetry have been carried out. When the ratio of LiClO₄/(EC/BL) is large, the electrolyte films are completely amorphous at room temperature and in the other cases, they are partially crystalline. The materials having higher EC/BL content are more likely to be a gel-electrolyte than a plasticized PEO-salt electrolyte. The Li⁺ ions in these films seem to migrate primarily through the solvent domains as in the gel-electrolytes. The highest room temperature conductivity of 2.0+10⁻³ S cm⁻¹ is found for a film of 31PEO-9LiClO₄-50EC/BL-10PAN. This film has a similar conductivity value as compared with PAN-based gel electrolytes, but with a better dimensional stability.

CC 37-5 (Plastics Manufacture and Processing)

ST lithium ionic conduction polyethylene oxide polyacrylonitrile; ethylene

carbonate lithium ionic cond polyoxyethylene; butyrolactone lithium ionic cond polyoxyethylene; glass temp polyethylene oxide electrolyte
 IT Glass transition temperature
 Ionic conductivity
 Melting point
 Recrystallization
 (DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butyrolactone-polyacrylonitrile electrolyte film)
 IT Polyoxyalkylenes, properties
 RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
 (DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butyrolactone-polyacrylonitrile electrolyte film)
 IT 7791-03-9, Lithium perchlorate
 RL: MOA (Modifier or additive use); USES (Uses)
 (DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butyrolactone-polyacrylonitrile electrolyte film)
 IT 96-48-0, Butyrolactone 96-49-1, Ethylene carbonate
 RL: NUU (Other use, unclassified); USES (Uses)
 (DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butyrolactone-polyacrylonitrile electrolyte film)
 IT 25014-41-9, Polyacrylonitrile 25322-68-3, Poly(ethylene oxide)
 RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
 (DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butyrolactone-polyacrylonitrile electrolyte film)
 IT 25322-68-3, Poly(ethylene oxide)
 RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
 (DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butyrolactone-polyacrylonitrile electrolyte film)
 RN 25322-68-3 HCPLUS
 CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)



RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 14 OF 26 HCPLUS COPYRIGHT 2005 ACS on STN
 AN 1998:395225 HCPLUS
 DN 129:69855
 TI Mechanisms of ionic conduction related to the structure of the gel electrolytes composed of crosslinked PEO matrix
 AU Aihara, Yuichi; Hayamizu, Kikuko; Arai, Shigemasa; Price, William S.
 CS Res. Deve. Cent., Yuasa Corp., Takatsuki, Japan
 SO Yuasa Jiho (1998), 84, 5-11
 CODEN: YUJIAX; ISSN: 0513-6342
 PB Yuasa Koporeshon
 DT Journal
 LA Japanese
 AB The ionic conduction mechanism of gel electrolytes was studied

by using the AC impedance method, differential scanning calorimetry, and pulse field gradient (PFG) NMR method. The gel **electrolytes** based on the typical crosslinked poly(ethylene oxide) (PEO) system were obtained from polyethylene glycol diacrylate in the presence of LiF and γ -**butyrolactone**. The gel **electrolytes** were obtained as a thin film form by the radical polymerization method. This **electrolyte** has an ionic conductivity of $4.0 + 10^{-3}$ Scm⁻¹ at 20° and good temperature properties. The diffusion coefficient was determined by using PFG-NMR. Comparison of data between δ_{obs} which was determined from the AC impedance method and δ_{nmr} which was determined by using Nernst-Einstein equation from diffusion coeffs. was considered. DSC curves showed several exothermic peaks as the different state of the solvent. Macroscopic homogeneity of the gel was confirmed for the samples of different salt concns. The ionic conductivity, diffusion coefficient and DSC data indicated interaction between the polymer and lithium cations in the gel system with a high solvent content. The ionic conduction mechanism as related to the gel structure in the PEO-gel system is proposed, and the difference of the ion existence between gels and liquid **electrolytes** was discussed.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s) : 38, 76

ST battery gel **electrolyte** ionic conduction;
polyethylene oxide gel **electrolyte** ionic cond

IT Battery **electrolytes**

Diffusion

Ionic conductivity

(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)

IT 25322-68-3, Peo 26570-48-9, Polyethylene glycol diacrylate

RL: DEV (Device component use); USES (Uses)

(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)

IT 96-48-0, γ - Butyrolactone 7789-24-4, Lithium fluoride, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)

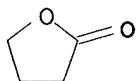
IT 96-48-0, γ - Butyrolactone

RL: TEM (Technical or engineered material use); USES (Uses)

(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



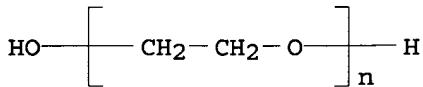
L30 ANSWER 15 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1998:135022 HCAPLUS

DN 128:271140

TI Diffusion, conductivity and DSC studies of a polymer gel electrolyte composed of cross-linked PEO, γ -butyrolactone and LiBF₄

AU Hayamizu, Kikuko; Aihara, Yuichi; Arai, Shigemasa; Price, William S.
CS National Institute of Materials and Chemical Research, 1-1 Higashi,
Tsukuba, 305, Japan
SO Solid State Ionics (1998), 107(1,2), 1-12
CODEN: SSIOD3; ISSN: 0167-2738
PB Elsevier Science B.V.
DT Journal
LA English
AB The gel electrolyte system composed of γ -butyrolactone (GBL), LiBF₄, and crosslinked acrylated poly(ethylene oxide) (PEO) with a mol. weight of 4000 (PEO4) was studied using the pulsed field gradient (PFG) NMR method to measure the diffusion coeffs. The NMR spin-lattice relaxation times, ionic conductivities and thermal behavior were also measured. Seven reference samples were also prepared pure GBL (sample A), 0.5, 1 and 1.5 M LiBF₄ in GBL (i.e., solution electrolyte; samples B-D), 20 weight% PEO4 in GBL (sample E), 1 M LiBF₄ plus 20 weight% PEO4 in GBL (sample F) and a gel without the salt (sample G), in addition to three gel electrolyte samples containing 0.5, 1, and 1.5 M concns. of LiBF₄ in GBL with 20 weight% crosslinked PEO4 (samples H-J). Importantly, using ¹H, ⁷Li, and ¹⁹F PFG NMR the diffusion coeffs. of all the species present were able to be measured. The diffusion coeffs. were sensitive to the salt concentration and the crosslinking of the polymer. The Li and BF₄ ions are solvated with GBL even in the gel state. The deviation of the measured conductivities from the values calculated using the Nernst-Einstein equation reflects the effects of ion association. It was observed that at least, at low salt concns., the polymer aids in the dissociation of the salt. By considering all of the exptl. data obtained, we show that in the gel system the BF₄ ions exist predominantly in the solvent while the motion of the Li ions, although solvated in GBL, is strongly associated with the polymer. From the combination of the conductivity and diffusion measurements we were able to obtain values for the dissociation consts. for the salt dissolved in the GBL and in the gel samples.
CC 37-5 (Plastics Manufacture and Processing)
ST polyoxyethylene butyrolactone lithium tetrafluoroborate property;
diffusion polyoxyethylene butyrolactone lithium tetrafluoroborate; ionic
cond polyoxyethylene butyrolactone lithium tetrafluoroborate
IT Diffusion
Glass transition temperature
Ionic conductivity
Spin-lattice relaxation
(diffusion and conductivity and DSC studies of crosslinked poly(ethylene
oxide)-butyrolactone-LiBF₄ gel electrolyte)
IT Polyoxyalkylenes, properties
RL: PRP (Properties)
(diffusion and conductivity and DSC studies of crosslinked poly(ethylene
oxide)-butyrolactone-LiBF₄ gel electrolyte)
IT 96-48-0, γ -Butyrolactone 14283-07-9, Lithium tetrafluoroborate
25322-68-3, Poly(ethylene oxide)
RL: PRP (Properties)
(diffusion and conductivity and DSC studies of crosslinked poly(ethylene
oxide)-butyrolactone-LiBF₄ gel electrolyte)
IT 25322-68-3, Poly(ethylene oxide)
RL: PRP (Properties)
(diffusion and conductivity and DSC studies of crosslinked poly(ethylene
oxide)-butyrolactone-LiBF₄ gel electrolyte)
RN 25322-68-3 HCPLUS
CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX
NAME)



RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 16 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1997:283977 HCAPLUS

DN 126:280321

TI Lithium batteries using lithium perchlorate

IN Aihara, Juichi

PA Yuasa Battery Co Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

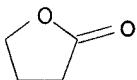
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	<u>JP 09063648</u>	A2	19970307	JP 1995-221606	19950830
PRAI	JP 1995-221606		19950830		
AB The batteries use gel electrolytes containing polymer solid electrolytes and organic solvents, and the concentration of the electrolytes enables LiClO ₄ to dissolve even after removal of the organic solvents. Although the batteries use dangerous LiClO ₄ , the electrolytes contribute to safety.					
IC	ICM H01M010-40				
	ICS H01M010-40; H01M006-18				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	lithium battery gel electrolyte safety; perchlorate				
IT	lithium polymer solid electrolyte battery				
IT	Battery electrolytes				
	(Li batteries using lithium perchlorate and gel electrolytes for safety)				
IT	7791-03-9, Lithium perchlorate				
	RL: DEV (Device component use); USES (Uses)				
	(Li batteries using lithium perchlorate and gel electrolytes for safety)				
IT	96-48-0, γ -Butyrolactone 25322-68-3D,				
	Polyethylene oxide, acrylate esters				
	RL: DEV (Device component use); USES (Uses)				
	(electrolyte component; Li batteries using lithium perchlorate and gel electrolytes for safety)				
IT	96-48-0, γ -Butyrolactone				
	RL: DEV (Device component use); USES (Uses)				
	(electrolyte component; Li batteries using lithium perchlorate and gel electrolytes for safety)				
RN	96-48-0 HCAPLUS				
CN	2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)				



L30 ANSWER 17 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1997:61157 HCAPLUS

DN 126:77522

TI Gel electrolytes for lithium batteries

IN Aihara, Juichi

PA Yuasa Battery Co Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08298126	A2	19961112	JP 1995-104489	19950428
PRAI JP 1995-104489		19950428		

AB The gel electrolytes are composed of a mixture containing a polymer and an organic electrolyte solution containing γ -butyrolactone and cyclic (carbonate) esters. The gel may be formed by crosslinking between the polymer and the ester containing ethylene oxide or propylene oxide units. The electrolytes have good low-temperature properties.

IC ICM H01M006-22

ICS C08F299-02; C08K005-101; C08L071-02; H01M006-16; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

ST battery gel electrolyte polymer ester butyrolactone

IT Polyoxalkylenes, uses

RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
(trifunctional acrylate; γ -butyrolactone containing gel electrolytes
from polymers and cyclic esters for lithium batteries)

IT Battery electrolytes

(γ -butyrolactone containing gel electrolytes from polymers and cyclic
esters for lithium batteries)

IT Lactones

RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)

(γ -butyrolactone containing gel electrolytes from polymers and cyclic
esters for lithium batteries)

IT 463-79-6D, Carbonic acid, esters, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)

(cyclic; γ -butyrolactone containing gel electrolytes from polymers
and cyclic esters for lithium batteries)

IT 96-48-0, γ -Butyrolactone

RL: DEV (Device component use); USES (Uses)

(γ -butyrolactone containing gel electrolytes from polymers and cyclic
esters for lithium batteries)

IT 25322-68-3D, trifunctional acrylate 106392-12-5, Ethylene
oxide-propylene oxide block copolymer

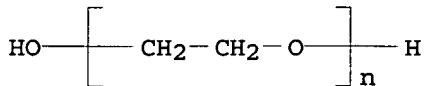
RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
(γ - butyrolactone containing gel electrolytes from
polymers and cyclic esters for lithium batteries)

IT 25322-68-3D, trifunctional acrylate

RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
(γ - butyrolactone containing gel electrolytes from
polymers and cyclic esters for lithium batteries)

RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX
NAME)



L30 ANSWER 18 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1996:483502 HCAPLUS

DN 125:119517

TI **Batteries** comprising porous negative and positive electrodes and liquid and solid **electrolyte**, and their manufacture

IN Bronoel, Guy

PA Laboratoires Sorapec, Fr.

SO Fr. Demande, 13 pp.

CODEN: FRXXBL

DT Patent

LA French

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI FR 2727246	A1	19960524	FR 1994-13760	19941117
PRAI FR 1994-13760		19941117		

AB In the **batteries**, comprising ≥ 1 porous neg. electrodes that may be intercalated with ≥ 1 alkali metals or alkaline earth metals, and ≥ 1 porous pos. electrodes comprising ≥ 1 active compds. that may contain the ions of the ≥ 1 alkali metals or alkaline earth metals, the internal and external surface of the neg. and/or pos. electrode is coated with a film of solid **electrolyte**, and the space remaining between, and in the pores of, the electrodes is filled with a liquid **electrolyte**. In the manufacture of the **batteries**, the neg. and/or pos. electrode is coated with a solution of the solid **electrolyte**, and the solvent removed. This method prevents degradation of the liquid **electrolyte**, especially at elevated temps., permits operation at a c.d. close to that of **batteries** containing a liquid **electrolyte**, increases elec. efficiency, and decreases dendrite growth. The **batteries** are suitable for use in elec. vehicles. A **battery** was manufactured using PWB3 (carbon fiber textiles) for the neg. electrodes, and the pos. electrodes were manufactured by introducing 3 g of a mixture consisting of V2O5 powder 60, carbon black 20, (CF3SO2)2NLi powder 17, and PTFE powder 3 weight% into a cellular NI plate. The separators consisted of nonwoven polypropene, and the assembly was immersed in an acetonitrile solution containing 3 weight% **polyethylene oxide** (mol. weight 5 + 106) and 4 weight% (CF3SO2)2NLi.

IC ICM H01M004-24

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary **battery** porous electrode coating; PWB3 carbon fiber textile neg electrode; vanadium pentoxide porous pos electrode; PTFE powder porous pos electrode; **polyethylene oxide** porous pos electrode; **electrolyte** porous electrode; acetonitrile porous electrode coating; lithium trifluoromethanesulfonate imide **electrolyte**

IT Polyethers, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(coatings; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT **Batteries**, secondary
(porous neg. and pos. electrodes and liquid and solid **electrolyte** for)

IT Coating materials
(solid **electrolytes**; porous neg. and pos. electrodes and liquid

and solid electrolyte for secondary batteries)

IT Electrodes
(battery, porous, porous neg. and pos. electrodes and liquid and solid electrolyte for secondary batteries)

IT Electrolytes
(solid, coating; porous neg. and pos. electrodes and liquid and solid electrolyte for secondary batteries)

IT Carbon fibers
(textiles, neg. electrodes; porous neg. and pos. electrodes and liquid and solid electrolyte for secondary batteries)

IT 1314-62-1, Vanadium pentoxide, uses 12037-42-2, Vanadium oxide (V6013)
39300-70-4, Lithium nickel oxide 39457-42-6, Lithium manganese oxide
52627-24-4, Cobalt lithium oxide
RL: TEM (Technical or engineered material use); USES (Uses)
(cellular metal pos. electrodes containing; porous neg. and pos. electrodes and liquid and solid electrolyte for secondary batteries)

IT 25322-68-3, Polyethylene oxide
RL: TEM (Technical or engineered material use); USES (Uses)
(coatings; porous neg. and pos. electrodes and liquid and solid electrolyte for secondary batteries)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(neg. electrode; porous neg. and pos. electrodes and liquid and solid electrolyte for secondary batteries)

IT 2169-38-2, Lithium tetramethylborate 14485-20-2, Lithium tetr phenyl borate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
RL: TEM (Technical or engineered material use); USES (Uses)
(porous neg. and pos. electrodes and liquid and solid electrolyte for secondary batteries)

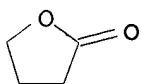
IT 7439-89-6, Iron, uses 7440-02-0, Nickel, uses 7440-50-8, Copper, uses 11105-45-6
RL: TEM (Technical or engineered material use); USES (Uses)
(porous, pos. electrodes; porous neg. and pos. electrodes and liquid and solid electrolyte for secondary batteries)

IT 7791-03-9, Lithium perchlorate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6
RL: TEM (Technical or engineered material use); USES (Uses)
(solid electrolyte films containing; porous neg. and pos. electrodes and liquid and solid electrolyte for secondary batteries)

IT 68-12-2, DMF, uses 96-48-0, Butyrolactone 96-49-1,
Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4 646-06-0,
Dioxolane
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; porous neg. and pos. electrodes and liquid and solid electrolyte for secondary batteries)

IT 96-48-0, Butyrolactone
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; porous neg. and pos. electrodes and liquid and solid electrolyte for secondary batteries)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 19 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 1996:273818 HCAPLUS
 DN 124:327255
 TI Gelled electrolyte with good mechanical strength
 IN Osada, Manabu; Akashi, Hiroyuki; Takemori, Shinichi; Sekai, Koji; Ozawa, Hitoshi; Nakajima, Kaoru; Karashima, Shuichi
 PA Sumitomo Seika KK, Japan; Sumitomo Seika Chemicals Co., Ltd.; Sony Corp.
 SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08064028	A2	19960308	JP 1994-203249	19940829
	JP 3481685	B2	20031222		
PRAI	JP 1994-203249		19940829		

AB The electrolyte is obtained by treating a polyalkylene oxide with weight average mol. weight 1000-1,000,000, a polyol, and an isocyanate compound in the presence of an amine- and/or Sn-containing catalyst, molding 100 parts of the resulting water-absorbing thermoplastic polymer and 0.1-20 parts of inorg. oxide, irradiating with 5-500-kGy electron beam, and impregnating with a solution containing an electrolyte and a nonaq. organic solvent. The electrolyte is useful for Li batteries, electrochem. devices, etc. The electrolyte showed high gel strength and good ionic conductivity

IC ICM H01B001-06

ICS C08G018-48; C08L075-08; H01M006-18

CC 72-3 (Electrochemistry)

Section cross-reference(s): 38, 52

ST polyalkylene polyurethane blend oxide electrolyte; electron beam crosslinking polyalkylene polyurethane electrolyte

IT Absorbents

(for water; gelled electrolyte containing electron-beam-crosslinked polyalkylene-polyurethane and inorg. oxide with good gel strength)

IT Battery electrolytes

Crosslinking

Electron beam

Gels

(gelled electrolyte containing electron-beam-crosslinked polyalkylene-polyurethane and inorg. oxide with good gel strength)

IT Electrolytes

(manufacture of gelled electrolyte with good mech. strength)

IT Urethane polymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(polyoxyalkylene-, gelled electrolyte containing electron-beam-crosslinked polyalkylene-polyurethane and inorg. oxide with good gel strength)

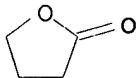
IT 77-58-7, Dibutyltin dilaurate 102-71-6, Triethanolamine, uses 121-44-8, Triethylamine, uses 280-57-9, Triethylenediamine 301-10-0, Stannous octoate 1067-33-0

RL: CAT (Catalyst use); USES (Uses)

(catalysts; in manufacture of gelled electrolyte with good mech. strength)

IT 1309-48-4, Magnesium oxide, uses 1314-13-2, Finex 25, uses 1344-28-1, Aluminum oxide, uses 7791-03-9, Lithium perchlorate 13463-67-7, MT 500B, uses 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium

hexafluorophosphate 84135-65-9, Finesil T 32 112153-70-5, Aerosil R
805
 RL: NUU (Other use, unclassified); USES (Uses)
 (in manufacture of gelled **electrolyte** with good mech. strength)
 IT 107040-16-4 107678-92-2 176676-78-1, Hexamethylene
 diisocyanate-1,9-nanediol-**polyethylene oxide** block
 copolymer 176676-79-2, 4,4'-Diphenylmethane diisocyanate-ethylene
 glycol-**polyethylene oxide**-polypropylene oxide block
 copolymer 176676-80-5
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in manufacture of gelled **electrolyte** with good mech. strength)
 IT 96-48-0, γ - **Butyrolactone** 108-32-7, Propylene
 carbonate
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvent; in manufacture of gelled **electrolyte** with good mech.
 strength)
 IT 96-48-0, γ - **Butyrolactone**
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvent; in manufacture of gelled **electrolyte** with good mech.
 strength)
 RN 96-48-0 HCAPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 20 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 1996:148076 HCAPLUS
 DN 124:181166
 TI Solid-**electrolyte batteries**
 IN Yamazaki, Mikya; Fujimoto, Masahisa; Shoji, Yoshihiro; Yoshimura, Seiji;
 Nishio, Koji; Saito, Toshihiko
 PA Sanyo Electric Co, Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 07320746	A2	19951208	JP 1994-131420	19940520
PRAI JP 1994-131420		19940520		

AB The **batteries** comprise Li anodes and (1) polymer solid **electrolytes** which are composites of carbonate ester group- or lactone group-introduced polymers and **electrolyte** salts or (2) polymer gel-type **electrolytes** comprising carbonate ester group- or lactone group-introduced polymers impregnated with **electrolyte** solns. containing **electrolyte** salts and nonprotonic solvents. The carbonate ester group may be ethylene carbonate, propylene carbonate, di-Me carbonate, or di-Et carbonate. The lactone group may be γ -**butyrolactone**. The polymers may be **polyethylene oxide**, polystyrene, **polyethylene oxide**, or polyoxymethylene. The **batteries** have high high-rate discharge capacity.

IC ICM H01M006-18
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38

ST carbonate solid polymer electrolyte battery; lactone
solid polymer electrolyte battery

IT **Battery electrolytes**
(polymers containing carbonate ester group or lactone group for solid
electrolytes or gel-type solid electrolytes for
batteries for high-rate discharge capacity)

IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(anode; polymers containing carbonate ester group or lactone group for solid
electrolytes or gel-type solid electrolytes
for batteries for high-rate discharge capacity)

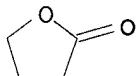
IT 9002-81-7, Polyoxymethylene 9002-88-4, Polyethylene 9003-53-6,
Polystyrene 25322-68-3, Polyethylene oxide
RL: DEV (Device component use); USES (Uses)
(carbonate ester- or lactone-introduced; polymers containing carbonate
ester group or lactone group for solid electrolytes or
gel-type solid electrolytes for batteries for
high-rate discharge capacity)

IT 7791-03-9, Lithium perchlorate
RL: DEV (Device component use); USES (Uses)
(electrolyte; polymers containing carbonate ester group or
lactone group for solid electrolytes or gel-type solid
electrolytes for batteries for high-rate discharge
capacity)

IT 96-48-0, γ - Butyrolactone 96-49-1, Ethylene
carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
616-38-6, Dimethyl carbonate
RL: DEV (Device component use); USES (Uses)
(polymers introduced with; polymers containing carbonate ester group or
lactone group for solid electrolytes or gel-type solid
electrolytes for batteries for high-rate discharge
capacity)

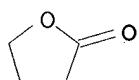
IT 96-48-0, γ - Butyrolactone
RL: DEV (Device component use); USES (Uses)
(polymers introduced with; polymers containing carbonate ester group or
lactone group for solid electrolytes or gel-type solid
electrolytes for batteries for high-rate discharge
capacity)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)

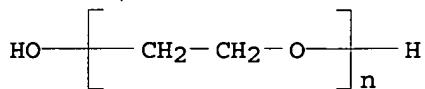


L30 ANSWER 21 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1996:138049 HCAPLUS
DN 124:181143
TI Gelled electrolyte lithium batteries
IN Yoshimura, Seiji; Shoji, Yoshihiro; Yamazaki, Mikya; Nishio, Koji; Saito,
Toshihiko
PA Sanyo Electric Co, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 07320750	A2	19951208	JP 1994-131432	19940520
JP 3384616	B2	20030310		
PRAI JP 1994-131432		19940520		
AB	<p>The batteries use a gelled polymer electrolyte containing an electrolyte salt and an aprotic solvent mixture comprising 40-80 volume% of a high b.p. solvent selected from ethylene carbonate, propylene carbonate, butylene carbonate, γ-butyrolactone, and sulfolane and 5-50 volume% each of ≥ 2 low b.p. solvent selected from 1,2-dimethoxyethane, 1,2-diethoxyethane, 1,2-ethoxymethoxyethane, THF, 2-Me THF, 1,3-dioxolane, 4-methyl-1,3-dioxolane, di-Me carbonate, di-Et carbonate, and Et Me carbonate. The polymer may be polyethylene oxide, polypropylene oxide, or polyethylenimine. The batteries have high capacity at high rate discharging.</p>			
IC	ICM H01M006-18			
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)			
ST	lithium battery polymer gelled electrolyte; aprotic solvent gelled polymer electrolyte battery			
IT	<p>Battery electrolytes (aprotic solvent mixts. for gelled polymer electrolytes for lithium batteries)</p>			
IT	<p>Polyoxyalkylenes, uses RL: DEV (Device component use); USES (Uses) (aprotic solvent mixts. for gelled polymer electrolytes for lithium batteries)</p>			
IT	<p>96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 629-14-1, 1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane 4437-85-8, Butylene carbonate 5137-45-1, 1,2-Ethoxymethoxyethane 9002-98-6 25322-68-3, Poly(ethylene oxide) 25322-69-4, Poly(propylene oxide) RL: DEV (Device component use); USES (Uses) (aprotic solvent mixts. for gelled polymer electrolytes for lithium batteries)</p>			
IT	<p>96-48-0, γ-Butyrolactone 25322-68-3, Poly(ethylene oxide) RL: DEV (Device component use); USES (Uses) (aprotic solvent mixts. for gelled polymer electrolytes for lithium batteries)</p>			
RN	96-48-0 HCPLUS			
CN	2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)			



RN 25322-68-3 HCPLUS
 CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)



L30 ANSWER 22 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 1996:138048 HCAPLUS
 DN 124:181142
 TI Gelled electrolyte lithium batteries
 IN Yoshimura, Seiji; Shoji, Yoshihiro; Yamazaki, Mikya; Nishio, Koji; Saito, Toshihiko
 PA Sanyo Electric Co, Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07320749	A2	19951208	JP 1994-131431	19940520
	JP 3384615	B2	20030310		
PRAI	JP 1994-131431		19940520		

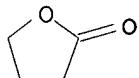
AB The batteries use a gelled polymer electrolyte impregnated with an electrolyte solution containing an electrolyte salt and an aprotic solvent mixture containing 5-50 volume% each of 2 high b.p. solvents selected from ethylene carbonate, propylene carbonate, butylene carbonate, γ -butyrolactone, and sulfolane and 10-50 volume% of 1 low b.p. solvent selected from 1,2-dimethoxyethane, 1,2-diethoxyethane, 1,2-ethoxymethoxyethane, THF, 2-Me THF, 1,3-dioxolane, 4-methyl-1,3-dioxolane, di-Me carbonate, di-Et carbonate, or Et Me carbonate. The polymer may be polyethylene oxide, polypropylene oxide, or polyethyleneimine. The batteries have high capacity at high rate discharging.

IC ICM H01M006-18
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium battery polymer gelled electrolyte; aprotic solvent gelled polymer electrolyte battery
 IT Battery electrolytes
 (aprotic solvent mixts. for gelled polymer electrolytes for lithium batteries)
 IT Polyoxyalkylenes, uses
 RL: DEV (Device component use); USES (Uses)
 (aprotic solvent mixts. for gelled polymer electrolytes for lithium batteries)
 IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 629-14-1, 1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane 4437-85-8, Butylene carbonate 5137-45-1, 1,2-Ethoxymethoxyethane 9002-98-6 25322-68-3, Poly(ethylene oxide) 25322-69-4, Poly(propylene oxide)
 RL: DEV (Device component use); USES (Uses)
 (aprotic solvent mixts. for gelled polymer electrolytes for lithium batteries)
 IT 96-48-0, γ -Butyrolactone 25322-68-3, Poly(ethylene oxide)

RL: DEV (Device component use); USES (Uses)
 (aprotic solvent mixts. for gelled polymer
 electrolytes for lithium batteries)

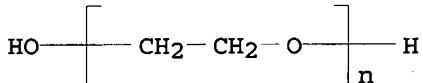
RN 96-48-0 HCPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 25322-68-3 HCPLUS

CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy- (9CI) (CA INDEX NAME)



L30 ANSWER 23 OF 26 HCPLUS COPYRIGHT 2005 ACS on STN

AN 1996:102519 HCPLUS

DN 124:119674

TI Aromatic polyamide-based ion-conductive films and precursor film therefor

IN Muraoka, Shigemitsu; Hamada, Masami

PA Asahi Kasei Kogyo K K, Japan

SO PCT Int. Appl.; 25 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9531499	A1	19951123	WO 1995-JP958	19950518
	W: JP, US				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP	760383	A1	19970305	EP 1995-918745	19950518
EP	760383	B1	20020807		
	R: DE, FR, GB, NL				
US	5834112	A	19981110	US 1997-737159	19970226

PRAI JP 1994-103631 A 19940518
 JP 1994-119768 A 19940601
 WO 1995-JP958 W 19950518

AB The title films, with good heat resistance and mech. strength, useful as solid electrolytes for secondary alkaline batteries, etc., comprise 20-70% aromatic polyamides (e.g., p-phenylenediamine-terephthalic acid copolymer), electrolytes (e.g., LiCl, NaOH, LiNO₃, LiBF₄), and solvents (e.g., polyethylene oxide, water, propylene carbonate-ethylene carbonate-γ-butyrolactone mixture) and optionally laminated with electrolyte-containing polymer layers (e.g., of polycarbonates).

IC ICM C08J005-18

ICS C08L077-10; B32B027-34; H01B001-20

ICA H01M006-18

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST arom polyamide film battery separator; electrolyte

IT arom polyamide **battery separator**; lithium chloride arom polyamide film; sodium hydroxide arom polyamide film; nitrate lithium arom polyamide film; boron lithium fluoride arom polyamide film; heat resistance arom polyamide film; ion conductive arom polyamide film; polycarbonate arom polyamide laminate

IT **Batteries**, secondary
Electric conductors
 Electrolytes
 (aromatic polyamide-based ion-conductive films and precursor film therefor)

IT Polycarbonates, uses
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PROC (Process); USES (Uses)
 (aromatic polyamide-based ion-conductive films and precursor film therefor)

IT Alkali metal compounds
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
 (electrolytes; aromatic polyamide-based ion-conductive films and precursor film therefor)

IT Polyamides, uses
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (aromatic, aromatic polyamide-based ion-conductive films and precursor film therefor)

IT 1310-73-2, Sodium hydroxide, uses 7447-41-8, Lithium chloride, uses 7790-69-4, Lithium nitrate 14283-07-9
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
 (aromatic polyamide-based ion-conductive films and precursor film therefor)

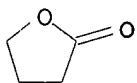
IT 24938-64-5, p-Phenylenediamine-terephthalic acid copolymer, SRU
25035-37-4, p-Phenylenediamine-terephthalic acid copolymer
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (aromatic polyamide-based ion-conductive films and precursor film therefor)

IT 96-48-0, γ -**Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 7732-18-5, Water, uses 25322-68-3, **Polyethylene oxide**
RL: NUU (Other use, unclassified); USES (Uses)
 (solvents; aromatic polyamide-based ion-conductive films and precursor film therefor)

IT 96-48-0, γ -**Butyrolactone**
RL: NUU (Other use, unclassified); USES (Uses)
 (solvents; aromatic polyamide-based ion-conductive films and precursor film therefor)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 24 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 1994:537503 HCAPLUS
 DN 121:137503
 TI An ionic conductive polymer **electrolyte**
 IN Kanbara, Teruhisa; Takeyama, Kenichi; Tsubaki, Yuichiro

PA Matsushita Electric Industrial Co., Ltd., Japan
 SO Eur. Pat. Appl., 37 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 579921	A1	19940126	EP 1993-108097	19930518
	EP 579921	B1	20030102		
	R: DE, DK, FR, GB				
	JP 06045190	A2	19940218	JP 1992-196754	19920723
	JP 06203874	A2	19940722	JP 1992-348114	19921228
	JP 3269146	B2	20020325		
	US 5538811	A	19960723	US 1993-62782	19930514
	CN 1083259	A	19940302	CN 1993-107708	19930518
	CN 1063871	B	20010328		
	EP 971427	A1	20000112	EP 1999-115038	19930518
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE				
PRAI	JP 1992-196754	A	19920723		
	JP 1992-348114	A	19921228		
	EP 1993-108097	A3	19930518		

AB The **electrolyte** contains a polymer having an ether-type oxygen, especially a random ethylene oxide-propylene oxide copolymer, and a plasticizer. The plasticizer is ≥ 1 compound described by the formulas $\text{HO}(\text{C}_2\text{H}_4\text{O})_n\text{H}$ where n is 2, 3, 4 or 5; $\text{RO}(\text{C}_2\text{H}_4\text{O})_n\text{H}$ where R is CH_3 , C_2H_5 , C_3H_7 or C_4H_9 and n is 3, 4 or 5; $\text{R}_1\text{O}(\text{C}_2\text{H}_4\text{O})_n\text{R}_2$ where $\text{R}_1=\text{R}_2=\text{CH}_3$ and n is 4, 5 or 6 or $\text{R}_1=\text{R}_2=\text{C}_2\text{H}_5$ and n is 4, 5 or 6 or $\text{R}_1=\text{R}_2=\text{C}_3\text{H}_7$ and n is 3, 4, 5 or 6 or $\text{R}_1=\text{R}_2=\text{C}_4\text{H}_9$ and n is 2, 3, 4 or 5 or $\text{R}_1=\text{CH}_3$, $\text{R}_2=\text{C}_4\text{H}_9$, and n is 4, 5 or 6; $\text{R}_1\text{O}(\text{C}_2\text{H}_4\text{O})_n(\text{C}_3\text{H}_6\text{O})_m\text{H}$ where $n+m$ is 2, 3, 4 or 5 and $\text{R}_1=\text{CH}_3$, C_2H_5 , C_3H_7 or C_4H_9 ; and $\text{R}_1\text{O}(\text{C}_2\text{H}_4\text{O})_n(\text{C}_3\text{H}_6\text{O})_m\text{R}_2$ where $n+m$ is 2, 3, 4, or 5 and $\text{R}_1=\text{R}_2=\text{CH}_3$.

IC ICM H01M006-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **electrolyte** polymer polyether plasticizer

IT Polyethers, uses

RL: USES (Uses)

(crosslinked, **electrolyte** containing random, and plasticizers)IT **Battery electrolytes**

(ionic conductive polymeric, containing plasticizers)

IT Electric conductors, polymeric

(ionic, random ethylene oxide-propylene oxide polymers and plasticizers as)

IT 9003-11-6, Ethylene oxide-propylene oxide copolymer 9082-00-2, Ethylene oxide-propylene oxide copolymer, glycerol ether

RL: USES (Uses)

(**electrolyte** containing plasticizers and)

IT 338-38-5, Tetrapropylammonium tetrafluoroborate 429-06-1,
 Tetraethylammonium tetrafluoroborate 429-07-2, Tetraethylammonium hexafluorophosphate 429-42-5, Tetrabutylammonium fluoroborate 558-32-7
 661-36-9, Tetramethylammonium tetrafluoroborate 1493-13-6D,
 Trifluoromethanesulfonic acid, tetraalkylphosphonium salts 1813-60-1,
 Tetrabutylphosphoniumtetrafluoroborate 1863-63-4, Ammonium benzoate 2567-83-1, Tetraethylammonium perchlorate 5574-97-0, Tetrabutylammonium phosphate 7439-93-2D, Lithium, salts 7601-90-3D, Perchloric acid, tetraalkylphosphonium salts 7790-98-9D, Ammonium perchlorate, tetraalkyl derivs. 12110-21-3, Tetrapropylammonium hexafluorophosphate 13826-83-0D, Ammonium tetrafluoroborate, tetraalkyl derivs. 14283-07-9, Lithium fluoroborate 14874-70-5D, Tetrafluoroborate, tetraalkylphosphonium salts 16909-22-1, Tetraethylammonium benzoate 16919-18-9D, Hexafluorophosphate, tetraalkylphosphonium salts

16941-11-0D, Ammonium hexafluorophosphate, tetraalkyl derivs.
 18819-89-1, Tetrabutylammonium benzoate 19090-60-9, Ammonium adipate
 19443-40-4, Ammonium borodisalicylate 21324-40-3, Lithium
 hexafluorophosphate 35895-70-6, Tetrabutyl ammonium
 trifluoromethanesulfonate 38542-94-8D, Ammonium
 trifluoromethanesulfonate, tetraalkyl derivs. 41606-95-5,
 Tetraethylammonium phthalate 53123-48-1 68874-26-0 82169-85-5,
 Ammonium azelate 106362-67-8 111754-37-1, Tetraethylammonium maleate
 111754-40-6, Tetraethylammonium maleate 111928-06-4,
 Tetraethylphosphoniumtrifluoromethanesulfonate 114480-39-6
 114609-41-5, Tetraethylphosphonium phthalate 129024-43-7
 RL: USES (Uses)

(electrolyte containing random polyethers and plasticizers and)

IT 96-48-0, γ - Butyrolactone 96-49-1, Ethylene
 carbonate 107-21-1, Monoethylene glycol, uses 108-32-7, Propylene
 carbonate 112-27-6, Triethylene glycol 112-34-5, Diethylene glycol
 monobutyl ether 112-35-6, Triethylene glycol monomethyl ether
 112-50-5, Triethylene glycol monoethyl ether 112-60-7, Tetraethylene
 glycol 112-73-2, Diethylene glycol dibutyl ether 112-98-1,
 Tetraethylene glycol dibutyl ether 123-91-1, Diethylene oxide, uses
 143-22-6, Triethylene glycol monobutyl ether 143-24-8, Tetraethylene
 glycol dimethyl ether 1559-34-8, Tetraethylene glycol monobutyl ether
 4353-28-0, Tetraethylene glycol diethyl ether 5650-20-4, Tetraethylene
 glycol monoethyl ether 9004-74-4, Polyethylene oxide
 , monomethyl ether 9004-77-7, Polyethylene glycol monobutyl ether
 9038-95-3 9063-06-3 23305-64-8, Triethylene glycol monopropyl ether
 23307-36-0, 3,6,9,12-Tetraoxapentadecan-1-ol 23783-42-8, Tetraethylene
 glycol monomethyl ether 24991-55-7, Polyethylene glycol dimethyl ether
 25322-68-3, Polyethylene oxide 27879-07-8,
 Polyethylene oxide, monoethyl ether 28830-99-1,
 4,7,10,13,16-Pentaoxanonadecane 31885-97-9, Polyethylene glycol dibutyl
 ether 34410-16-7, Polyethylene oxide, monopropyl
 ether 50958-06-0 53609-62-4, Polyethylene glycol diethyl ether
 54692-61-4 55068-41-2 60314-50-3, Polyethylene glycol dipropyl ether
 61419-46-3 63512-36-7, Triethylene glycol dibutyl ether 76058-48-5,
 Tetraethylene glycol butyl methyl ether 77318-45-7, 4,7,10,13-
 Tetraoxahexadecane 80730-57-0
 RL: MOA (Modifier or additive use); USES (Uses)

(plasticizer, electrolyte containing random polyethers and)

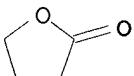
IT 96-48-0, γ - Butyrolactone

RL: MOA (Modifier or additive use); USES (Uses)

(plasticizer, electrolyte containing random polyethers and)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 25 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1993:564029 HCAPLUS

DN 119;164029

TI Secondary battery with solid electrolyte

IN Simon, Bernard; Boeuve, Jean Pierre

PA Alcatel Alsthom Compagnie Generale d'Electricite, Fr.

SO Eur. Pat. Appl., 4 pp.

CODEN: EPXXDW

DT Patent

LA French

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 517069	A1	19921209	EP 1992-108841	19920526
	EP 517069	B1	19960327	R: CH, DE, ES, FR, GB, IT, LI, NL, SE	
	FR 2677174	A1	19921204	FR 1991-6589	19910531
	FR 2677174	B1	19930806		
	ES 2084871	T3	19960516	ES 1992-108841	19920526
	US 5232795	A	19930803	US 1992-889234	19920528
	JP 05205778	A2	19930813	JP 1992-139408	19920529
PRAI	FR 1991-6589	A	19910531		

AB The **battery** has an **electrolyte** of a polymer containing a Li salt and a dipolar aprotic solvent, an anode of a Li-intercalatable carbonaceous material and the **electrolyte**, and a cathode of a material having a high redox potential, the **electrolyte**, and a conductive powder. The carbonaceous material is at least on the surface less crystalline than graphite and impermeable to solvent, while permitting the diffusion of Li. The carbonaceous material is selected from coke, graphitized carbon fibers, and pyrolytic C, and it contains a surface layer obtained by chemical vapor deposition using hydrocarbons or by carbonization of a polymer film. The salt anions are selected from AsF₆⁻, BF₄⁻, PF₆⁻, CF₃SO₃⁻, ClO₄⁻, BPh₄⁻, N(CF₃SO₂)₂, and SCN⁻; the nonaq. solvent is selected from ethylene carbonate, propylene carbonate, THF, etc.; and the polymer is selected from PEO, poly(propylene oxide) and ethylene oxide-propylene oxide copolymer. The cathode active material is selected from LiV₂O₅, LiCo₂, and Li-doped polyaniline or polypyrrole. The stability of the invention button-type **battery** anode was demonstrated in >500 charge-discharge cycles.

IC ICM H01M010-40

ICS H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

ST **battery** anode carbonaceous material; anode lithium intercalatable carbonaceous material; polymer **electrolyte** carbonaceous material anode; salt lithium solvent polymer **electrolyte**; solvent polar salt polymer **electrolyte**

IT **Battery electrolytes**
(aprotic dipolar solvent-containing lithium salt-PEO or lithium salt-poly(propylene oxide) complexes)

IT **Batteries, secondary**
(lithium-intercalatable carbonaceous material, long cycle-life)

IT Carbonaceous materials

Coke

RL: USES (Uses)
(lithium-intercalatable, anodes, containing polymer **electrolytes**, for **batteries**)

IT Solvents
(aprotic, dipolar, **electrolytes** from lithium salt-polymer complexes and, for **batteries** and **battery** anodes and cathodes)

IT Anodes
(**battery**, lithium-intercalatable carbonaceous materials, containing polymer **electrolytes**)

IT Carbon fibers, uses
RL: USES (Uses)
(graphite, lithium-intercalatable, anodes, containing polymer **electrolytes**, for **batteries**)

IT 7440-44-0 7782-42-5
 RL: USES (Uses)
 (carbon fibers, graphite, lithium-intercalatable, anodes, containing polymer electrolytes, for batteries)

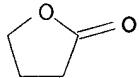
IT 12162-92-4, Lithium vanadium oxide (LiV₂O₅) 12190-79-3, Cobalt lithium oxide (LiCoO₂) 25233-30-1D, reduced, lithium-doped 30604-81-0D, Polypyrrole, reduced, lithium-doped
 RL: USES (Uses)
 (cathodes, containing polymer electrolytes, for batteries)

IT 67-68-5, DMSO, uses 96-48-0, γ - Butyrolactone
 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-99-9, THF, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 616-38-6, Dimethyl carbonate 616-42-2, Dimethyl sulfite 24991-55-7, Polyethyleneglycol dimethyl ether
 RL: USES (Uses)
 (electrolytes from lithium salt-polymer complexes and, for batteries and battery anodes and cathodes)

IT 7439-93-2D, Lithium, polymer complexes 9003-11-6D, Lithium complexes 25322-68-3D, Polyethylene oxide, Lithium complexes 25322-69-4D, Polypropylene oxide, Lithium complexes
 RL: USES (Uses)
 (electrolytes from nonaq. aprotic dipolar solvents and, for batteries and battery anodes and cathodes)

IT 96-48-0, γ - Butyrolactone
 RL: USES (Uses)
 (electrolytes from lithium salt-polymer complexes and, for batteries and battery anodes and cathodes)

RN 96-48-0 HCPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 26 OF 26 HCPLUS COPYRIGHT 2005 ACS on STN
 AN 1993:499821 HCPLUS
 DN 119:99821
 TI A new gelling agent and its application as a solid electrolyte for lithium batteries
 AU Ue, Makoto; Kaitoh, Mitsumasa; Yasukawa, Eiki; Mori, Shoichiro
 CS Tsukuba Res. Cent., Mitsubishi Petrochem. Co., Ltd., Ami, 300-03, Japan
 SO Electrochimica Acta (1993), 38(9), 1301-2
 CODEN: ELCAAV; ISSN: 0013-4686
 DT Journal
 LA English
 AB A new gelling agent 1,3:2,4-di(p-methoxycarbonylbenzylidene)sorbitol was used to immobilize liquid electrolytes for Li batteries. The liquid electrolytes were solidified without a significant decrease in conductivity. The mech. strength of a gelled electrolyte comprising a polymer matrix of poly(ethylene oxide)-grafted poly(methacrylate) and the liquid electrolyte was remarkably enhanced without a conductivity decrease.
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST methoxycarbonylbenzylidenesorbitol gelling agent liq electrolyte battery; lithium battery gelled electrolyte;

polyethylene oxide grafted polymethacrylate gelled electrolyte

IT **Battery electrolytes**
(liquid, dibenzylidenesorbitol derivs. gelling agents in, for immobilization)

IT 68-12-2, N,N-Dimethylformamide, uses 96-48-0, γ -**Butyrolactone** 108-32-7, Propylene carbonate 110-71-4
RL: USES (Uses)
(electrolyte containing, dibenzylidenesorbitol derivs. gelling agents in, for lithium batteries, for immobilization)

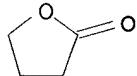
IT 108927-94-2
RL: USES (Uses)
(electrolyte containing, gelled, for lithium batteries, for mech. strength)

IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate (LiBF₄)
RL: USES (Uses)
(electrolyte, dibenzylidenesorbitol derivs. gelling agents in, for batteries, for immobilization)

IT 125498-92-2
RL: USES (Uses)
(gelling agent, electrolytes containing, liquid, for immobilization, for lithium batteries)

IT 96-48-0, γ -**Butyrolactone**
RL: USES (Uses)
(electrolyte containing, dibenzylidenesorbitol derivs. gelling agents in, for lithium batteries, for immobilization)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



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=> => D QUE
L5      1 SEA FILE=REGISTRY ABB=ON BUTYROLACTONE/CN
L6      1 SEA FILE=REGISTRY ABB=ON "POLYETHYLENE OXIDE"/CN
L7      15837 SEA FILE=HCAPLUS ABB=ON L5 OR BUTYROLACTONE
L8      84653 SEA FILE=HCAPLUS ABB=ON L6
L9      321 SEA FILE=HCAPLUS ABB=ON L7 AND L8
L11     2202 SEA FILE=HCAPLUS ABB=ON L7 (L) ELECTROLYT?
L13     4 SEA FILE=HCAPLUS ABB=ON L11 (L) L8
L15     140 SEA FILE=HCAPLUS ABB=ON L9 AND ELECTROLYT?
L16     97 SEA FILE=HCAPLUS ABB=ON L15 AND BATTER?
L17     2675 SEA FILE=HCAPLUS ABB=ON L8 (L) DEV/RL
L18     61 SEA FILE=HCAPLUS ABB=ON L17 AND L16
L19     1588 SEA FILE=HCAPLUS ABB=ON L7 (5A) SOLVENT#
L21     6 SEA FILE=HCAPLUS ABB=ON L18 AND L19
L22     9 SEA FILE=HCAPLUS ABB=ON L13 OR L21
L23     7685 SEA FILE=HCAPLUS ABB=ON POLYMER(4A) ADDITIV?
L24     1 SEA FILE=HCAPLUS ABB=ON L18 AND L23
L25     1 SEA FILE=HCAPLUS ABB=ON L16 AND L23
L26     9 SEA FILE=HCAPLUS ABB=ON L22 OR L24 OR L25
L27     47 SEA FILE=HCAPLUS ABB=ON L7 AND POLYETHYLENE OXIDE
L28     30 SEA FILE=HCAPLUS ABB=ON L27 AND ELECTROLYT?
L29     20 SEA FILE=HCAPLUS ABB=ON L28 AND BATTER?
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L30	26 SEA FILE=HCAPLUS ABB=ON	L26 OR L29
L31	78 SEA FILE=HCAPLUS ABB=ON	L7 AND PEO
L32	53 SEA FILE=HCAPLUS ABB=ON	L31 AND ELECTROLYT? AND BATTER?
L33	2 SEA FILE=HCAPLUS ABB=ON	L19 AND L32
L34	43 SEA FILE=HCAPLUS ABB=ON	L11 AND L32
L35	0 SEA FILE=HCAPLUS ABB=ON	L23 AND L34
L36	0 SEA FILE=HCAPLUS ABB=ON	L23 AND L32
L40	10 SEA FILE=HCAPLUS ABB=ON	L32 AND NONAQ?
L41	36 SEA FILE=HCAPLUS ABB=ON	L30 OR L33 OR L35 OR L36 OR L40
L42	10 SEA FILE=HCAPLUS ABB=ON	L41 NOT L30

=> D L42 BIB ABS IND HITSTR 1-10

L42 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2004:964673 HCAPLUS
 DN 141:398264
 TI Method for preparation of chemically crosslinked polyacrylonitrile polymer electrolyte as separator for secondary battery
 IN Chen, Show-An; Xue, Uan-Jie; Lee, Jen-Jeh; Wang, Po-Shen
 PA Taiwan
 SO U.S. Pat. Appl. Publ., 12 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2004224233	A1	20041111	US 2003-428789	20030505
PRAI US 2003-428789		20030505		

AB A composite gel-type polymer electrolyte membrane, as a separator between the pos. and the neg. electrode for secondary battery, consists of crosslinked gel-type polyacrylonitrile (PAN) electrolytes, polyvinylidene fluoride (PVDF) polymers and liquid electrolytes. The crosslinked gel-type PAN electrolytes are copolymerd. by acrylonitrile (AN) monomers and crosslinked monomers with two terminal acrylic acid ester function groups. The PVdF can be PVdF-co-HFP polymers containing over 80% PVdF. The liquid electrolytes are made from using nonaq. solvents to dissolve alkaline or alkaline earth metallic salts. This invention has advantages of superior ionic conductivities and mech. strength at high temperature, fine compatible to pos. and neg. electrodes and potential to be industrialized.

IC ICM H01M010-40
 ICS H01M004-58; H01M004-60; H01M004-40
 INCL 429303000; 429314000; 429316000; 429317000; 429307000; 429213000;
 429231950; 429231400
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST polyacrylonitrile electrolyte separator secondary
 battery
 IT Secondary batteries
 (lithium; method for preparation of chemical crosslinked polyacrylonitrile electrolyte as separator for secondary battery)
 IT Adhesion, physical
 Battery electrolytes
 Conducting polymers
 Ionic conductivity
 Secondary battery separators
 Swelling, physical
 (method for preparation of chemical crosslinked polyacrylonitrile

electrolyte as separator for secondary battery)

IT Alkali metal salts
 Alkaline earth salts
 Amides, uses
 Esters, uses
 Fluoropolymers, uses
 Lactones
 RL: DEV (Device component use); USES (Uses)
 (method for preparation of chemical crosslinked polyacrylonitrile
 electrolyte as separator for secondary battery)

IT Polyoxyalkylenes, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (method for preparation of chemical crosslinked polyacrylonitrile
 electrolyte as separator for secondary battery)

IT Polysulfides
 RL: DEV (Device component use); USES (Uses)
 (organic; method for preparation of chemical crosslinked polyacrylonitrile
 electrolyte as separator for secondary battery)

IT Fillers
 (porous; method for preparation of chemical crosslinked polyacrylonitrile
 electrolyte as separator for secondary battery)

IT Lithium alloy, base
 RL: DEV (Device component use); USES (Uses)
 (method for preparation of chemical crosslinked polyacrylonitrile
 electrolyte as separator for secondary battery)

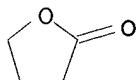
IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses
96-48-0, γ -Butyrolactone 96-49-1, Ethylene
 carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 110-71-4 463-79-6D, Carbonic acid, ester, acyclic 463-79-6D, Carbonic
 acid, ester, cyclic 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl
 carbonate 872-50-4, n-Methylpyrrolidone, uses 7439-93-2, Lithium, uses
 7440-44-0, Carbon, uses 7447-41-8, Lithium chloride (LiCl), uses
 7550-35-8, Lithium bromide (LiBr) 7704-34-9D, Sulfur, organic compds.,
 polymers 7791-03-9, Lithium perchlorate 9011-17-0,
 Hexafluoropropylene-vinylidene fluoride copolymer 10377-51-2, Lithium
 iodide 10411-26-4, Butyl carbonate 12031-65-1, Lithium nickel oxide
 (LiNiO₂) 12057-17-9, Lithium manganese oxide (LiMn₂O₄) 12162-79-7,
 Lithium manganese oxide limno₂ 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium
 tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3,
 Lithium hexafluorophosphate 24937-79-9, Pvdf 29935-35-1, Lithium
 hexafluoroarsenate 30604-81-0, Polypyrrole 33454-82-9, Lithium
 triflate 39448-96-9, Graphite lithium 90076-65-6 132404-42-3
 132843-44-8 210406-60-3
 RL: DEV (Device component use); USES (Uses)
 (method for preparation of chemical crosslinked polyacrylonitrile
 electrolyte as separator for secondary battery)

IT 25014-41-9P, Polyacrylonitrile
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (method for preparation of chemical crosslinked polyacrylonitrile
 electrolyte as separator for secondary battery)

IT 25322-68-3, Peo
 RL: MOA (Modifier or additive use); USES (Uses)
 (method for preparation of chemical crosslinked polyacrylonitrile
 electrolyte as separator for secondary battery)

IT **96-48-0, γ -Butyrolactone**
 RL: DEV (Device component use); USES (Uses)
 (method for preparation of chemical crosslinked polyacrylonitrile
 electrolyte as separator for secondary battery)

RN 96-48-0 HCAPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L42 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:412653 HCAPLUS

DN 140:409655

TI Nonaqueous electrolytic solution for lithium
battery

IN Kim, Ju-Yup; Cho, Myung-Dong; Ryu, Young-Gyo

PA Samsung SDI Co., Ltd., S. Korea

SO U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004096750	A1	20040520	US 2003-669464	20030925
	CN 1501541	A	20040602	CN 2003-158727	20030922
	JP 2004172120	A2	20040617	JP 2003-385057	20031114
PRAI	KR 2002-71397	A	20021116		
OS	MARPAT 140:409655				
AB	A nonaq. electrolytic solution and a lithium battery employing the same are provided. The nonaq. electrolyte solution that contains a substituted or unsubstituted acetate can effectively stabilize lithium metal and improve the conductivity of lithium ions.				
IC	ICM H01M010-40				
	ICS H01M004-58; H01M004-48; H01M004-40				
INCL	429326000; 429332000; 429218100; 429231950; 429231100				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	lithium battery nonaq electrolytic soln				
IT	Secondary batteries (lithium; nonaq. electrolytic solution for lithium battery)				
IT	Battery electrolytes (nonaq. electrolytic solution for lithium battery)				
IT	Carbon black, uses Polyoxyalkylenes, uses				
	RL: DEV (Device component use); USES (Uses) (nonaq. electrolytic solution for lithium battery)				
IT	Lithium alloy, base				
	RL: DEV (Device component use); USES (Uses) (nonaq. electrolytic solution for lithium battery)				
IT	71-43-2D, Benzene, organic solvents containing monofluoro derivs. 96-48-0 , γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4 111-96-6, Diethyleneglycol dimethyl ether 112-36-7, Diethyleneglycol diethyl ether 112-49-2, Triethyleneglycol dimethyl ether 463-79-6D, Carbonic acid, ester 616-38-6, Dimethyl carbonate 646-06-0,				

1,3-Dioxolane 872-36-6, Vinylene carbonate 1072-47-5,
 4-Methyl-1,3-dioxolane 1072-57-7 4499-99-4, Triethyleneglycol diethyl
 ether 7439-93-2, Lithium, uses 7440-44-0D, Carbon, sulfur compound,
 polymer 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, carbon compound,
 polymer 12137-46-1, Kasolite 21324-40-3, Lithium hexafluorophosphate
 25322-68-3, Peo 29921-38-8, 4-Ethyl-1,3-dioxolane
 31371-55-8, Ethane, 1,2-dimethoxy-, homopolymer 73506-93-1,
 Diethoxyethane 74432-42-1, Lithium polysulfide 183140-14-9,
 1,3-Dioxetan-2-one 676610-04-1

RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolytic solution for lithium
 battery)

IT 105-37-3 105-53-3, Diethyl malonate 105-54-4 106-70-7 108-59-8,
 Dimethyl malonate 109-21-7 123-66-0 554-12-1 590-01-2 623-42-7
 626-82-4 1190-39-2, DiButyl malonate 6186-89-6, Ethylmethyl malonate
 17373-84-1, Butylethyl malonate 79546-83-1, Butylmethyl malonate
 90076-65-6

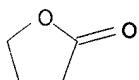
RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolytic solution for lithium
 battery)

IT 96-48-0, γ - Butyrolactone

RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolytic solution for lithium
 battery)

RN 96-48-0 HCPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L42 ANSWER 3 OF 10 HCPLUS COPYRIGHT 2005 ACS on STN

AN 2003:818002 HCPLUS

DN 139:326050

TI Nonaqueous electrolytes based on alkali metal salts of
 N,N'-disubstituted amides of alkane iminosulfonic acid for electrochemical
 cells

IN Shembel, Elena; Koval, Ivan V.; Oliynik, Tat'yna G.; Chervakov, Oleg V.;
 Novak, Peter

PA Ener1 Battery Company, Ukraine

SO U.S. Pat. Appl. Publ., 14 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003194612	A1	20031016	US 2002-122788	20020415
	US 6858346	B2	20050222		
	WO 2003090297	A1	20031030	WO 2003-US11644	20030415
	WO 2003090297	C1	20041216		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
 CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
 PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
 UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

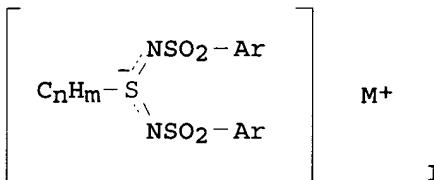
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
 KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
 FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1500155 A1 20050126 EP 2003-728413 20030415

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

PRAI US 2002-122788 A 20020415
 WO 2003-US11644 W 20030415

GI



AB An organic salt having an alkali metal bound to a disubstituted amide of alkane iminosulfinic acid has the general formula (I), where Ar is an aromatic group, M is an alkali metal such as Li, K or Na, and CnHm is an alkane. The organic salt can be used to form nonaq. liquid and gel or plasticized polymer electrolytes. The electrolytes can be used to form improved lithium and lithium ion batteries.

IC ICM H01M010-40

INCL 429324000; 429339000; 429340000; 429337000; 429338000; 429326000;
 429331000; 429332000; 429333000; 429303000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 23, 38

ST battery nonaq electrolyte alkane

iminosulfinic acid amide; electrochem cell nonaq
 electrolyte alkane iminosulfinic acid amide

IT Polymer electrolytes

(gel or plasticized; nonaq. electrolytes based on
 alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic
 acid for electrochem. cells)

IT Polymers, uses

RL: DEV (Device component use); USES (Uses)
 (halo; nonaq. electrolytes based on alkali metal
 salts of N,N'-disubstituted amides of alkane iminosulfinic acid for
 electrochem. cells)

IT Transition metal oxides

RL: DEV (Device component use); USES (Uses)
 (lithiated; nonaq. electrolytes based on alkali
 metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid
 for electrochem. cells)

IT Secondary batteries

(lithium; nonaq. electrolytes based on alkali metal
 salts of N,N'-disubstituted amides of alkane iminosulfinic acid for
 electrochem. cells)

IT Battery electrolytes

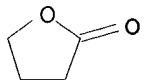
(nonaq. electrolytes based on alkali metal salts of
 N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
 cells)

IT Fluoropolymers, uses

Polyoxyalkylenes, uses

- RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolytes based on alkali metal salts of
 N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
 cells)
- IT 70-55-3 98-10-2, Benzenesulfonamide
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PROC (Process)
 (nonaq. electrolytes based on alkali metal salts of
 N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
 cells)
- IT 1313-13-9, Manganese dioxide, uses 1314-62-1, Vanadium oxide (V2O5),
 uses 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate
 9002-86-2, Polyvinyl chloride 9002-86-2D, Polyvinyl chloride,
 chlorinated 9011-14-7, Pmma 12037-42-2, Vanadium oxide v6o13
 12057-17-9, Lithium manganese oxide limn2o4 12798-95-7 14283-07-9,
 Lithium tetrafluoroborate 24937-79-9, Pvdf 25014-41-9,
 Polyacrylonitrile 25322-68-3, Peo 29935-35-1, Lithium
 hexafluoroarsenate 33454-82-9, Lithium triflate 66798-39-8
 87871-75-8 90076-65-6 164383-74-8 164383-75-9
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolytes based on alkali metal salts of
 N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
 cells)
- IT 613685-10-2P
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic
 preparation); PREP (Preparation); USES (Uses)
 (nonaq. electrolytes based on alkali metal salts of
 N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
 cells)
- IT 613685-08-8P
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (nonaq. electrolytes based on alkali metal salts of
 N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
 cells)
- IT 7782-42-5, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene
 fluoride copolymer
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolytes based on alkali metal salts of
 N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
 cells)
- IT 613685-09-9P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (nonaq. electrolytes based on alkali metal salts of
 N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
 cells)
- IT 67-68-5, Dmso, uses 68-12-2, Dmf, uses 96-48-0, γ -
Butyrolactone 96-49-1, Ethylene carbonate 107-13-1,
 Acrylonitrile, uses 108-32-7, Propylene carbonate 110-71-4 111-96-6,
 Diglyme 126-33-0, Sulfolane 127-19-5, Dimethyl acetamide 616-38-6,
 Dimethyl carbonate 646-06-0, 1,3-Dioxolane
 RL: TEM (Technical or engineered material use); USES (Uses)
 (nonaq. electrolytes based on alkali metal salts of
 N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
 cells)
- IT 96-48-0, γ - **Butyrolactone**
 RL: TEM (Technical or engineered material use); USES (Uses)
 (nonaq. electrolytes based on alkali metal salts of
 N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
 cells)

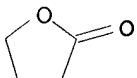
RN 96-48-0 HCAPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

- L42 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2003:437466 HCAPLUS
 DN 139:263175
 TI Characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**
 AU Matsuda, Yoshiharu; Fukushima, Tsuyoshi; Katoh, Yuichi; Ishiko, Eriko; Nishiura, Masahito; Kikuta, Manabu; Kono, Michiyuki
 CS Faculty of Engineering, Department of Applied Chemistry, Kansai University, Suita, Osaka, 564-8680, Japan
 SO Journal of Power Sources (2003) 119-121, 473-477
 CODEN: JPSODZ; ISSN: 0378-7753
 PB Elsevier Science B.V.
 DT Journal
 LA English
 AB Gel polymer **electrolytes** consisted of poly(alkylene oxide) (PAO), LiBF₄ or LiClO₄, and aprotic **solvents** (γ - **butyrolactone** (GBL) and/or ethylene carbonate (EC)) were prepared and the conductivity was measured. The conductivity was very high and similar to that of the organic liquid **electrolytes**. The performance of Li | gel polymer **electrolyte** | LiCoO₂ cell was measured and compared to that of the cell with the liquid **electrolyte** corresponded. The cell with the gel **electrolyte** showed a decrease of capacity at high-rate discharge and low temperature owing to concentration polarization.
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38, 76
 ST alkylene oxide polymer **electrolyte** gamma **butyrolactone** lithium salt **battery**; discharge capacity performance gel **electrolyte** lithium concn carbonate
 IT Solvents
 (aprotic; characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
 IT Battery **electrolytes**
 Crosslinking
 Gels
 Ionic conductivity
 Polymer **electrolytes**
 (characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
 IT Polyoxyalkylenes, uses
 RL: DEV (Device component use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
 IT Binders
 (composite electrode with C and CoLiO₂; characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)

- IT **Electrolytic polarization**
 (concentration, change with cycling; characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
- IT **Secondary batteries**
 (lithium; characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
- IT 15520-11-3, Bis(4-tert-butylcyclohexyl) peroxydicarbonate
 RL: CAT (Catalyst use); USES (Uses)
 (characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
- IT 7429-90-5, Aluminum, uses
 RL: DEV (Device component use); USES (Uses)
 (characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
- IT 9003-11-6P, Ethylene oxide-propylene oxide copolymer
 RL: DEV (Device component use); PRP (Properties); RCT (Reactant); SPN
 (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent);
 USES (Uses)
 (characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
- IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 RL: DEV (Device component use); USES (Uses)
 (composite electrode with C and binder; characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
- IT 7440-44-0, Carbon, uses
 RL: DEV (Device component use); USES (Uses)
 (composite electrode with binder and CoLiO₂; characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
- IT 7439-93-2, Lithium, uses
 RL: DEV (Device component use); USES (Uses)
 (electrode; characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
- IT 7791-03-9 14283-07-9
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (gels with aprotic solvent and PEO-PPO; characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
- IT 96-48-0, γ - **Butyrolactone** 96-49-1, Ethylene carbonate
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (gels with lithium salt and PEO-PPO; characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
- IT 96-48-0, γ - **Butyrolactone**
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (gels with lithium salt and PEO-PPO; characteristics of gel alkylene oxide polymer **electrolytes** containing γ - **butyrolactone**)
- RN 96-48-0 HCPLUS
- CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2002:163800 HCAPLUS
 DN 136:219519
 TI Phenyl boron-based compounds as anion receptors for nonaqueous battery electrolytes
 IN Lee, Hung Sui; Yang, Xiao-qing; McBreen, James; Sun, Xuehui
 PA Brookhaven Science Associates, Llc, USA
 SO U.S., 15 pp., Cont.-in-part of U. S. 6,022,643.
 CODEN: USXXAM
 DT Patent
 LA English
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6352798	B1	20020305	US 2000-492569	20000127
	US 6022643	A	20000208	US 1997-986846	19971208
PRAI	US 1997-986846	A2	19971208		
OS	MARPAT 136:219519				
AB	Novel fluorinated boronate-based compds. which act as anion receptors in nonaq. battery electrolytes are provided. When added to nonaq. battery electrolytes, the fluorinated boronate-based compds. of the invention enhance ionic conductivity and cation transference number of nonaq. electrolytes. The fluorinated boronate-based anion receptors include different fluorinated alkyl and aryl groups.				
IC	ICM H01M006-14				
INCL	429324000				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 27				
ST	battery electrolyte anion receptor fluorinated boronate based compd				
IT	Battery electrolytes Ionic conductivity (Ph boron-based compds. as anion receptors for nonaq. battery electrolytes)				
IT	Polyanilines Polyoxyalkylenes, uses Polysulfides Transition metal chalcogenides Transition metal oxides RL: DEV (Device component use); USES (Uses) (Ph boron-based compds. as anion receptors for nonaq. battery electrolytes)				
IT	Oxides (inorganic), uses RL: DEV (Device component use); USES (Uses) (lithiated; Ph boron-based compds. as anion receptors for nonaq. battery electrolytes)				
IT	Lithium alloy, base RL: DEV (Device component use); USES (Uses) (Ph boron-based compds. as anion receptors for nonaq. battery electrolytes)				
IT	75-05-8, Acetonitrile, uses 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-87-5, Dimethoxymethane 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 115-10-6, Dimethyl ether 126-33-0, Sulfolane 534-22-5, 2-Methylfuran 616-38-6, Dimethyl carbonate 646-06-0, 1,3-Dioxolane 872-50-4, 1-Methyl-2-pyrrolidinone, uses 1072-47-5 1072-71-5, 2,5-Dimercapto-1,3,4-thiadiazole				

2923-17-3, Lithium trifluoroacetate 7439-93-2, Lithium, uses
 7440-44-0D, Carbon, intercalation compound, with lithium 7447-41-8,
 Lithium chloride, uses 7550-35-8, Lithium bromide 7789-24-4, Lithium
 fluoride, uses 7791-03-9, Lithium perchlorate 9011-17-0,
 Hexafluoropropylene-vinylidene fluoride copolymer 10377-51-2, Lithium
 iodide 12031-65-1, Lithium nickel oxide linio₂ 12057-17-9, Lithium
 manganese oxide limn₂o₄ 12162-79-7, Lithium manganese oxide limno₂
 12190-79-3, Cobalt lithium oxide colio₂ 12201-18-2, Lithium molybdenum
 sulfide limos₂ 14283-07-9, Lithium tetrafluoroborate 18424-17-4,
 Lithium hexafluoroantimonate 19836-78-3, 3-Methyl-2-oxazolidinone
 21324-40-3, Lithium hexafluorophosphate 25014-41-9, Polyacrylonitrile
 25233-30-1, Polyaniline 25322-68-3, Peo 25948-29-2, Carbon
 disulfide, homopolymer 29935-35-1, Lithium hexafluoroarsenate
 39448-96-9, Graphite lithium 55326-82-4, Lithium titanium sulfide litis₂
 55886-04-9, Lithium niobium selenide Li₃NbSe₃ 87187-79-9, Propanoic
 acid, pentafluoro-, lithium salt 87442-01-1, Benzoic acid, pentafluoro-,
 lithium salt 131344-56-4, Cobalt lithium nickel oxide 138187-48-1,
 Lithium vanadium oxide Li_{1.2}V₂O₅ 152991-98-5, Aluminum lithium nickel
 oxide 159967-11-0, Lithium magnesium nickel oxide 180984-62-7, Lithium
 nickel titanium oxide 256345-13-8, Lithium vanadium oxide Li_{2.5}V₆O₁₃

RL: DEV (Device component use); USES (Uses)

(Ph boron-based compds. as anion receptors for nonaq.
 battery electrolytes)

IT 23542-71-4P 365458-32-8P 365458-33-9P 365458-34-0P 365458-35-1P
 365458-36-2P 365458-37-3P 365458-38-4P 365458-39-5P 365458-40-8P
 402564-35-6P 402564-36-7P 402564-37-8P 402564-38-9P 402564-39-0P

RL: DEV (Device component use); MOA (Modifier or additive use); SPN
 (Synthetic preparation); PREP (Preparation); USES (Uses)

(Ph boron-based compds. as anion receptors for nonaq.
 battery electrolytes)

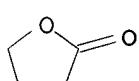
IT 96-48-0, γ - Butyrolactone

RL: DEV (Device component use); USES (Uses)

(Ph boron-based compds. as anion receptors for nonaq.
 battery electrolytes)

RN 96-48-0 HCPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 6 OF 10 HCPLUS COPYRIGHT 2005 ACS on STN
 AN 2001:488750 HCPLUS

DN 135:79460

TI Nonaqueous electrolytic secondary battery

IN Hosoya, Yosuke

PA Sony Corporation, Japan

SO Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
PI EP 1113515	A1	20010704	EP 2000-128148	20001221

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO

JP 2001185221	A2	20010706	JP 1999-369266	19991227
US 2001036579	A1	20011101	US 2000-749982	20001227
US 6656634	B2	20031202		

PRAI JP 1999-369266 A 19991227

AB A nonaq. electrolytic cell comprises a pos. electrode, which has a pos. electrode active material layer containing, at least a pos. electrode active material, a neg. electrode, which has a neg. electrode active material layer containing, at least, a neg. electrode active material, and an electrolyte wherein a sulfur compound is added to at least one of the pos. electrode active material layer, the neg. electrode active material layer, and the electrolyte.

IC ICM H01M004-50

ICS H01M004-52; H01M004-58; H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery nonaq electrolyte

IT Battery anodes

Battery cathodes

Battery electrolytes

Conducting polymers

(nonaq. electrolytic secondary battery)

IT Coke

Fluoropolymers, uses

Polyacetylenes, uses

Polyoxyalkylenes, uses

Polyphosphazenes

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytic secondary battery)

IT Thiols (organic), uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES

(Uses)

(nonaq. electrolytic secondary battery)

IT Carbon fibers, uses

RL: DEV (Device component use); USES (Uses)

(vitreous; nonaq. electrolytic secondary
battery)

IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ -

Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 554-12-1, Methylpropionate 616-38-6, Dimethyl carbonate 623-42-7, Methyl butyrate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 872-36-6, Vinylene carbonate 2916-31-6 4437-85-8, Butylene carbonate 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 25067-58-7, Polyacetylene 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25684-76-8, Tetrafluoroethylene-vinylidene fluoride copolymer 28960-88-5, Trifluoroethylene-vinylidene fluoride copolymer 29935-35-1, Lithium hexafluoroarsenate

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytic secondary battery)

IT 693-36-7, Distearyl thiodipropionate 7487-88-9, Magnesium sulfate, uses

7757-82-6, Sodium sulfate, uses 7757-83-7, Sodium sulfite 7757-88-2, Magnesium sulfite 7778-80-5, Potassium sulfate, uses 10117-38-1, Potassium sulfite

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

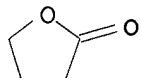
(nonaq. electrolytic secondary battery)

IT 872-50-4, n-Methylpyrrolidone, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (nonaq. electrolytic secondary battery)

IT 96-48-0, γ -Butyrolactone
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolytic secondary battery)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2001:246688 HCAPLUS
 DN 134:254694
 TI Gel electrolyte battery
 IN Shibuya, Mashio; Hatazawa, Tsuyonobu; Hara, Tomitaro; Shibamoto, Goro;
 Goto, Shuji
 PA Sony Corporation, Japan
 SO Eur. Pat. Appl., 24 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 1089371	A1	20010404	EP 2000-121124	20000928
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
JP 2001167797	A2	20010622	JP 1999-375345	19991228
TW 512555	B	20021201	TW 2000-89119769	20000925
NO 2000004856	A	20010402	NO 2000-4856	20000927
US 6509123	B1	20030121	US 2000-672881	20000928
CN 1293461	A	20010502	CN 2000-128592	20000930
PRAI JP 1999-279790	A	19990930		
JP 1999-375345	A	19991228		
AB	The present invention provides a gel electrolyte cell including a nonaq. electrolytic solution containing lithium-containing electrolyte salt solved in a nonaq. solvent and made into a gel state by a matrix polymer, and the gel electrolyte contains vinylene carbonate or derivative thereof in the amount not less than 0.05 wt% and not greater than 5 wt%. This gel electrolyte exhibits an excellent chemical stability with the neg. electrode, strength, and liquid-retention characteristic. This gel electrolyte enables to obtain a gel electrolyte cell satisfying the cell capacity, cycle characteristic, load characteristic, and low-temperature characteristic.			
IC	ICM H01M010-40			
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 38			
ST	battery gel electrolyte			
IT	Battery electrolytes Gels (gel electrolyte battery)			

IT Fluoropolymers, uses
 Polyoxyalkylenes, uses
 RL: DEV (Device component use); USES (Uses)
 (gel electrolyte battery)

IT Lithium alloy, base
 RL: DEV (Device component use); USES (Uses)
 (gel electrolyte battery)

IT 7429-90-5, Aluminum, uses
 RL: DEV (Device component use); USES (Uses)
 (current collector; gel electrolyte battery)

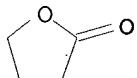
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 872-36-6,
 Vinylene carbonate 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses
 7791-03-9, Lithium perchlorate 9011-17-0, Hexafluoropropylene-vinylidene
 fluoride copolymer 12190-79-3, Cobalt lithium oxide colio2 14283-07-9,
 Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25067-61-2,
 Polymethacrylonitrile 25322-68-3, Peo 25322-69-4,
 Polypropylene oxide 90076-65-6 113066-89-0, Cobalt lithium nickel
 oxide Co0.2LiNi0.8O2 132843-44-8
 RL: DEV (Device component use); USES (Uses)
 (gel electrolyte battery)

IT 96-48-0, γ -Butyrolactone 452-10-8,
 2,4-Difluoroanisole 7782-42-5, Graphite, uses 167951-81-7
 RL: MOA (Modifier or additive use); USES (Uses)
 (gel electrolyte battery)

IT 96-48-0, γ -Butyrolactone
 RL: MOA (Modifier or additive use); USES (Uses)
 (gel electrolyte battery)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:592491 HCAPLUS

DN 133:196001

TI Gel electrolyte battery

IN Shibuya, Mashio; Goto, Shuji

PA Sony Corp., Japan

SO Eur. Pat. Appl., 21 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1030398	A1	20000823	EP 2000-102764	20000210
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000243447	A2	20000908	JP 1999-41456	19990219
	US 6465134	B1	20021015	US 2000-499448	20000207
	TW 494592	B	20020711	TW 2000-89102212	20000210
	CN 1267926	A	20000927	CN 2000-108303	20000218

PRAI JP 1999-41456 A 19990219

AB A gel electrolyte comprised of a nonaq. electrolytic solution immersed in a matrix polymer, in which ion conductivity of a solvent is improved and superior cyclic characteristics are achieved. To this end, the gel electrolyte includes an electrolyte, a matrix polymer and a nonaq. solvent. The nonaq. solvent is a mixed solvent of ethylene carbonate (EC), propylene carbonate (PC) and γ -butyrolactone (GBL). The nonaq. solvent is of a weight composition in an area in a triangular phase diagram (EC, PC, GBL) surrounded by a point (70, 30, 0), a point (55, 15, 30), a point (15, 55, 30) and a point (30, 70, 0). A gel electrolyte battery employing this electrolyte is also disclosed.

IC ICM H01M010-40

ICS H01M006-22

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST battery gel electrolyte

IT Battery electrolytes

Secondary batteries

(gel electrolyte battery)

IT Fluoropolymers, uses

Polyoxyalkylenes, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(gel electrolyte battery)

IT 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide colio2
113066-91-4, Cobalt lithium nickel oxide Co0.8LiNi0.2O2

RL: DEV (Device component use); USES (Uses)

(gel electrolyte battery)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene
carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate
9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 21324-40-3,
Lithium hexafluorophosphate 24937-79-9, Polyvinylidene fluoride
25322-68-3, PEO 25322-69-4, Polypropylene oxide 90076-65-6
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)

(gel electrolyte battery)

IT 100-66-3D, Anisole, fluoro derivative

RL: MOA (Modifier or additive use); USES (Uses)

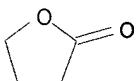
(gel electrolyte battery)

IT 96-48-0, γ -ButyrolactoneRL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)

(gel electrolyte battery)

RN 96-48-0 HCPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 9 OF 10 HCPLUS COPYRIGHT 2005 ACS on STN

AN 2000:144320 HCPLUS

DN 132:183114

TI Nonaqueous electrolyte batteries

IN Yoshihisa, Hiroyoshi

PA Yuasa Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

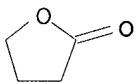
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000067916	A2	20000303	JP 1998-241440	19980827
PRAI	JP 1998-241440		19980827		
AB	The batteries, containing Li intercalating carbonaceous anodes, use Li ₂ CO ₃ saturated electrolyte solns. or solid electrolytes.				
IC	ICM H01M010-40				
	ICS H01M010-40				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	secondary lithium battery electrolyte lithium carbonate; battery lithium carbonate satd electrolyte				
IT	Battery electrolytes (electrolyte solns. and solid electrolytes saturated with lithium carbonate for secondary lithium batteries)				
IT	Polyoxyalkylenes, uses RL: DEV (Device component use); USES (Uses) (electrolyte solns. and solid electrolytes saturated with lithium carbonate for secondary lithium batteries)				
IT	96-48-0, γ- Butyrolactone	96-49-1, Ethylene carbonate	14283-07-9, Lithium fluoroborate	25014-41-9, Polyacrylonitrile	25322-68-3, Peo RL: DEV (Device component use); USES (Uses) (electrolyte solns. and solid electrolytes saturated with lithium carbonate for secondary lithium batteries)
IT	554-13-2, Lithium carbonate				RL: MOA (Modifier or additive use); USES (Uses) (electrolyte solns. and solid electrolytes saturated with lithium carbonate for secondary lithium batteries)
IT	96-48-0, γ- Butyrolactone				RL: DEV (Device component use); USES (Uses) (electrolyte solns. and solid electrolytes saturated with lithium carbonate for secondary lithium batteries)
RN	96-48-0 HCPLUS				
CN	2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)				



L42 ANSWER 10 OF 10 HCPLUS COPYRIGHT 2005 ACS on STN

AN 1989:518216 HCPLUS

DN 111:118216

TI Solidification of nonaqueous electrolyte solutions

IN Watanabe, Masashi; Kajita, Hiroyuki; Kumada, Yasuyuki

PA Sumitomo Chemical Co., Ltd., Japan; Meisei Chemical Works, Ltd.

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01112667	A2	19890501	JP 1987-269056	19871023
PRAI	JP 1987-269056		19871023		

AB A nonaq. electrolyte solution is solidified by absorbing the solution into a highly water-absorbable mono- or poly-isocyanate-modified PEO. The solidified electrolyte has high elec. conductivity and is useful for Li batteries and electrochromic devices, etc. Thus, Sumikagel R 30 R was uses for the solidification of a LiClO₄/γ- butyrolactone electrolyte.

IC ICM H01M006-18

ICS C08G018-48; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 74, 76

ST solid electrolyte modified PEO; lithium battery electrolyte solid; lithium perchlorate modified PEO electrolyte; electrochromic device solid electrolyte

IT Optical imaging devices
(electrochromic, cyanate-modified PEO absorbent for solid electrolytes in)IT Batteries, secondary
(solid-electrolyte, cyanate-modified PEO absorbent for nonaq. lithium)

IT 117989-91-0, Sumikagel R 30R

RL: USES (Uses)
(absorbent, for nonaq. lithium perchlorate electrolyte solns., for lithium batteries and electrochromic devices)

IT 96-48-0, γ- Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate

RL: USES (Uses)
(electrolyte containing lithium perchlorate and, cyanate-modified PEO absorbent in, for lithium batteries and electrochromic devices)

IT 7791-03-9, Lithium perchlorate

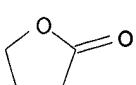
RL: USES (Uses)
(electrolyte, nonaq., cyanate-modified PEO absorbent for, for lithium batteries and electrochromic devices)

IT 96-48-0, γ- Butyrolactone

RL: USES (Uses)
(electrolyte containing lithium perchlorate and, cyanate-modified PEO absorbent in, for lithium batteries and electrochromic devices)

RN 96-48-0 HCPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



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